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```
/*
 * plugext1.0 is a compiled version of plugext for Tcl.
 * -- Clif Flynt <clif@cflynt.com> Jan 3, 1999
 * --
 * -- Modified from get.c by
 * -- Jean-Claude Wippler <jcw@equi4.com>, September 17, 1998.
 */

#include <stdio.h>
#if defined (_WIN32)
#include <windows.h>
#else
#include <dlfcn.h>
#endif
#include <tcl.h>

Tcl_HashTable *dlopen_hashtablePtr;
extern int dummyDebugPrint;

void dlopen_InitHashTable () {
    dlopen_hashtablePtr = (Tcl_HashTable *) ckalloc(sizeof(Tcl_HashTable));
    Tcl_InitHashTable(dlopen_hashtablePtr, TCL_STRING_KEYS);
}

static int
dlopen(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv)
{
    char hash_handle[50];
    char *tmp;
    void *handle;
    Tcl_HashEntry *hashEntryPtr;
    Tcl_Obj *returnObjPtr;
    int isNew;

    if (objc > 1)
    {

        tmp = TclGetStringFromObj(objv[1], NULL);
        #if defined (_WIN32)
            handle = LoadLibrary(tmp);
        #else
            handle = dlopen(tmp, RTLD_NOW | RTLD_GLOBAL);
        #endif

        if (!handle) {
            fprintf(stderr, "FAIL IN DOPEN: %s\n", tmp);
        #if defined (_WIN32)
            fprintf (stderr, "%s\n", "Is there a windows errro fcn");
        #else
            fprintf (stderr, "%s\n", dlerror());
        #endif
            return(TCL_ERROR);
        }
    }
}
```

```

/*
 * Allocate the space and initialize the return structure.
 */
sprintf(hash_handle, "X%x", handle);

hashEntryPtr = Tcl_CreateHashEntry(dlopen_hashtablePtr, hash_handle,
&isNew);
Tcl_SetHashValue(hashEntryPtr, handle);

returnObjPtr = Tcl_NewStringObj(hash_handle, -1);

Tcl_SetObjResult(interp, returnObjPtr);

return TCL_OK;
}

__getfpucw() {printf("hit getfpucw\n"); fflush(stdout);}

#if defined (_WIN32)

static int
dlSym(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv) {

    Tcl_Obj *returnObjPtr;

    returnObjPtr = Tcl_NewStringObj("dlSym not implemented for Windows", -1);

    Tcl_SetObjResult(interp, returnObjPtr);
    return TCL_OK;
}

#else

static int
dlSym(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv)
{
    char *hash_handle;
    char *tmp;
    void *handle;
    Tcl_HashEntry *hashEntryPtr;
    Tcl_Obj *returnObjPtr;
    void *locat;
    char rtnString[20];

    if (objc > 1)
    {
        hash_handle = TclGetStringFromObj(objv[1], NULL);
        hashEntryPtr = Tcl_FindHashEntry(dlopen_hashtablePtr, hash_handle);
        if (hashEntryPtr == (Tcl_HashEntry *) NULL) {
            char errString[80];
            Tcl_Obj *errCodePtr;

/*

```

```

    * Define an error code from an integer, and set errorCode.
    */
errCodePtr = Tcl_NewIntObj(554);
Tcl_SetObjErrorCode(interp, errCodePtr);

/*
 * This string will be placed in the global variable errorInfo
 */

sprintf(errString, "Hash object \"%s\" does not exist.", hash_handle);
Tcl_AddErrorInfo(interp, errString);

/*
 * This string will be returned as the result of the command.
 */
Tcl_AppendResult(interp, "can not find hashed object named \"",
                 hash_handle, "\", (char *) NULL);
return TCL_ERROR;
}

handle = (char *)Tcl_GetHashValue(hashEntryPtr);

tmp = TclGetStringFromObj(objv[2], NULL);

locat = dlsym(handle, tmp);

sprintf(rtnString, "%x", locat);

}

/*
 * Allocate the space and initialize the return structure.
 */
returnObjPtr = Tcl_NewStringObj(rtnString, -1);

Tcl_SetObjResult(interp, returnObjPtr);

return TCL_OK;
}
#endif

#if defined (_WIN32)

#define WINEXPORT(t) __declspec(dllexport) t
#ifndef _WIN
#define WINEXPORT(t) t __declspec(dllexport)
#endif
#define WINEXPORT(t) t __declspec(dllexport)
#endif

#if defined (__MWERKS__)
#pragma export on
#endif

```

```
WINEXPORT(int) Dlopen_Init(Tcl_Interp* interp)
{
    Tcl_CreateObjCommand(interp, "dlopen", dlOpen, 0, 0);
    Tcl_CreateObjCommand(interp, "dlsym", dlSym, 0, 0);

    dlopen_InitHashTable ();
    Tcl_PkgProvide(interp, "dlopen", "1.0");
    return TCL_OK;
}

WINEXPORT(int) Dlopen_SafeInit(Tcl_Interp* interp)
{
    return Dlopen_Init(interp);
}
```

```

package require plugext

#
#
# Embed - state variable
# Embed(uniq) - A unique number for the instances
# Embed(UPPER.$id) - A keyword/value pair for an instance.
# Embed(lower.$id) - A value assigned by the embed command.
#
# Embed(MIMETYPE)      - The command for this creation of the plugin
# Embed(instance.$id)   - The command for this instance of the plugin
# Embed(canvas.$id)     - The canvas for this instance of the plugin
#
# Adds one new arg to embed xx=yy -
# KEEPOPEN=1    default - the embed call does not close the stream after
#                      sending data to the plugin.
# KEEPOPEN=0    default - the embed call closes the stream after
#                      sending data to the plugin. Closing the stream causes some
#                      plugins to start.

namespace eval EMBED {
variable Embed
variable output [open argh w]

set Embed(uniq) 1
set Embed(CanvasParent) ""

switch $tcl_platform(platform) {
    "unix" {
        package require dlopen
        set Embed(xref) {
            {.mid audio/x-midi /usr/lib/netscape/plugins/ump.so}
            {.midi audio/x-midi /usr/lib/netscape/plugins/ump.so}
        }
    }
    "windows" {
        set Embed(xref) {
            {.rpm audio/x-pn-realaudio-plugin ./nppl3260.dll}
            {.rm audio/x-pn-realaudio-plugin ./nppl3260.dll}
            {.spl application/futuresplash ./npswf32.dll}
            {.swf application/shockwave-flash ./npswf32.dll}
            {.pdf application/pdf ./nppdf32.dll}
            {.afl video/animaflex ./nprub.dll}
            {.ivf video/x-ivf ./npindeo.dll}
            {.wav audio/x-wav ./npwave.dll}
            {.mid audio/x-midi ./midid.dll}
            {.midi audio/x-midi ./midid.dll}
            {.npw application/x-npwrap ./NPWrap.dll}
            {.mid audio/x-midi ./npmidi.dll}
            {.midi audio/x-midi ./npmidi.dll}
        }
    }
}

proc getCanvas {id} {
    variable Embed
    if {[info exists Embed(canvas.$id)]} {

```

```

        return $Embed(canvas.$id)
    } else {
        return ""
    }
}

proc getInstance {id} {
    variable Embed
    if {[info exists Embed(canvas.$id)]} {
        return $Embed(instance.$id)
    } else {
        return ""
    }
}

proc setCanvasParent {windowID} {
    set Embed(CanvasParent) $windowID
}

proc embed {args} {
    global tcl_platform
    variable Embed
    variable output

    set id $Embed(uniq)
    incr Embed(uniq)

    set mode "EMBED"
    set Embed(HIDDEN.$id) true
    set Embed(KEEPOPEN.$id) 1

    #
    # Parse the args.
    # Find the key=val and key="val" pairs and convert them to
    # set Embed(KEY) val
    # commands.
    #

    foreach arg $args {
        if {[string first "=" $arg] < 0} {continue}
        foreach {key val} [split $arg "="] {
            set val [string trim $val "{}"]
            set key [string toupper $key]
        }
        eval [list set Embed($key.$id) $val]
    }

    #
    # If the plugext extension is not loaded, load it.
    # If *n[ui]x platform, dlopen the required X libraries.
    #

    if {[string match "" [info command plugext]]} {
        if {[string match $tcl_platform(platform) unix]} {
            puts $output "loading dlopen, etc" ; flush $output
            # load "./dlopen"
        }
    }
}

```

```

        dlopen "/usr/X11R6/lib/libXt.so"
        dlopen "/usr/local/lib/libXm.so"
    }
# load plugext
plugext debug 1
}

#
# Figure out which plugin we need. Start by checking
# the SRC=...ext to see if we've got that extension in our list.
#

if {[info exists Embed(SRC.$id)]} {
    set ext [file extension $Embed(SRC.$id)]
    set pos [lsearch $Embed(xref) *$ext*]
    if {$pos >= 0} {
        set pluginPath [lindex [lindex $Embed(xref) $pos] 2]
        if {! [info exists Embed(TYPE.$id)]} {
            set Embed(TYPE.$id) [lindex [lindex $Embed(xref) $pos] 1]
        }
    }
}

# If no SRC matched, see if we can get the required info
# via the Mime TYPE=xx value

if {! [info exists pluginPath] && [info exists Embed(TYPE.$id)]} {
    set pos [lsearch $Embed(xref) *$Embed(TYPE.$id)*]
    if {$pos < 0} {break}
    set pluginPath [lindex [lindex $Embed(xref) $pos] 2]
}

# If we still can't figure out what to use, give up.

if {! [info exists pluginPath]} {
    error "No plugin defined for $args"
}

# Load the required plugin.
# Save it's handle in a state variable keyed by the Mime Type

set pluginID $Embed(TYPE.$id)

if {! [info exists Embed($pluginID)]} {
    set Embed($pluginID) [plugext create TST2 -path $pluginPath]
}

foreach a $args {
    if {[string first "=" $a] > 0} {
        if {[info exists embedargs]} {
            append embedargs " " $a
        } else {
            set embedargs $a
        }
    }
}

```

```

set Embed(instance.$id) [$Embed($pluginID) new \
    -mime $Embed(TYPE.$id) -embed $embedargs \
    -mode $mode]

#
# Generate a window, if HEIGHT and WIDTH are set, and HIDDEN=false/0
# If HIDDEN == True but HEIGHT/WIDTH are missing, set default size
#     200x200

# Can't use ! with a string, so I kludge to get !hidden

if {"$Embed(HIDDEN.$id)"} {} else {
    set ht 200;
    set wd 200;

    if {[info exists Embed(HEIGHT.$id)]} {
        set ht $Embed(HEIGHT.$id)
    }

    if {[info exists Embed(WIDTH.$id)]} {
        set wd $Embed(WIDTH.$id)
    }

    set Embed(canvas.$id) [canvas $Embed(CanvasParent).cPLUGIN$id \
        -height $ht -width $wd -background yellow]

    puts $output "CANVAS: $Embed(canvas.$id) :: $ht x $wd"; flush $output

    # Grid and update, to make sure the base OS has really allocated
    # space for this window before sending it to the plugin. Else,
    # life gets exciting.

    grid $Embed(canvas.$id) -row 0 -column 0
    update; update idle;

    $Embed(instance.$id) setwindow $Embed(canvas.$id)
    grid forget $Embed(canvas.$id)
}

#
# Figure out the type of stream we'll need to interact with
# Then close the stream again.
#

set Embed(out.$id) [$Embed(instance.$id) open -url file:$Embed(SRC.$id) -mime
$Embed(TYPE.$id) w]
fconfigure $Embed(out.$id) -translation binary
set streamType [$Embed(instance.$id) streamtype]

puts $output "STR: $streamType" ; flush $output

#
# Dump data as required by the stream type.
#

switch $streamType {
    "asfile"      {

```

```

        $Embed(instance.$id) streamfile $Embed(SRC.$id)
    }
    "asfileonly"      {
        $Embed(instance.$id) streamfile $Embed(SRC.$id)
    }
    "normal"        {
        set in [open $Embed(SRC.$id) r]
        fconfigure $in -translation binary

        set maxTransfer [$Embed(instance.$id) writeready $Embed(out.$id)]
        if {$maxTransfer > 64000} {
            set maxTransfer 64000
        }

        puts $output "maxTransfer: $maxTransfer"
        fconfigure $Embed(out.$id) -buffersize $maxTransfer

        # If the file is small go for speed.
        # If it's greater than 64K, reduce the memory footprint,
        # since it won't be fast no matter what we do.

        if {[file size $Embed(SRC.$id)] > 64000} {
            while {!eof $in} {
                set dat [read $in 4096]
                puts -nonewline $Embed(out.$id) $dat
            }
            flush $Embed(out.$id)
        } else {
            set dat [read $in]
            close $in
            puts -nonewline $Embed(out.$id) $dat
            flush $Embed(out.$id)
        }
        puts "DONE XFER"
    }
    default         {
        error "Unrecognized stream value: $streamType"
    }
}
if {!$Embed(KEEPOPEN.$id)} {
    puts "CLOSING $Embed(out.$id)"
    closeFile $id
}
return $id
}

proc resetWindow {id} {
    variable Embed
    if {"$Embed(HIDDEN.$id)"} {} else {
        $Embed(instance.$id) setwindow $Embed(canvas.$id)
    }
}
proc closeFile {id} {
    variable Embed
    if {[info exists Embed(out.$id)]} {
        close $Embed(out.$id)
        unset Embed(out.$id)
    }
}

```

```
    }  
}  
}
```

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```

#if defined (_WIN32)
#include <windows.h>
#endif
#include "extensionLib.h"

void *getHashData (Tcl_Interp *interp,
                  char *hashName,
                  Tcl_HashTable *hashtablePtr) {
    Tcl_HashEntry *hashEntryPtr;
    hashEntryPtr = Tcl_FindHashEntry(hashtablePtr, hashName);

    if (hashEntryPtr == (Tcl_HashEntry *) NULL) {
        char errString[80];
        Tcl_Obj *errCodePtr;

        /*
         * Define an error code from an integer, and set errorCode.
         */
        errCodePtr = Tcl_NewIntObj(554);
        Tcl_SetObjErrorCode(interp, errCodePtr);

        /*
         * This string will be placed in the global variable errorInfo
         */

        sprintf(errString, "Hash object \"%s\" does not exist.", hashName);
        Tcl_AddErrorInfo(interp, errString);

        /*
         * This string will be returned as the result of the command.
         */

        Tcl_AppendResult(interp, "can not find hashed object named \"",
                        hashName, "\", (char *) NULL);

        return (void *) NULL;
    }

    /*
     * If we got here, then the search was successful and we can extract
     * the data value from the hash entry and return it.
     */

    return (void *) Tcl_GetHashValue(hashEntryPtr);
}

CmdReturn *makeCmdReturn () {

    CmdReturn *returnStructPtr;

    /*
     * Allocate the space and initialize the return structure.
     */

    returnStructPtr = (CmdReturn *) Tcl_Alloc(sizeof (CmdReturn));
    returnStructPtr->status = TCL_OK;
}

```

```

    returnStructPtr->object = NULL;

    return returnStructPtr;
}

void setErrorReturns(Tcl_Interp *interp,
                     char *formatStr1,
                     char *param1_1,
                     char *param1_2,
                     char *param1_3,
                     char *formatStr2,
                     char *param2_1,
                     char *param2_2,
                     char *param2_3,
                     char *procedureName,
                     char *errString)

{
    char errString1[180];
    char errString2[180];
    char errString3[80];

    sprintf(errString1, formatStr1, param1_1, param1_2, param1_3);
    sprintf(errString2, formatStr2, param2_1, param2_2, param2_3);
    sprintf(errString3, "error in %s", procedureName);

    /*
     * Both of these strings will be added to the Tcl script
     * global variable errorInfo
     */
    Tcl_AddObjErrorInfo(interp, errString1, strlen(errString1));
    Tcl_AddErrorInfo(interp, errString3);

    /*
     * This SetErrorCode command will set the Tcl script
     * variable errorCode to "500"
     */
    Tcl_SetErrorCode(interp, errString, (char *) NULL);

    /*
     * This defines the return string for this subcommand
     */
    Tcl_AppendResult(interp, errString1, (char *) NULL);
}

/*
* void plugext_InitHashTable ()--
*   plugextialize a hash table.
*   If your application does not need a hash table, this may be deleted.
*
* Arguments
*   NONE
*

```

```
* Results
*   Initializes the hash table to accept STRING keys
*
* Side Effects:
*   None
-----*/
Tcl_HashTable *initHashTable () {
    Tcl_HashTable *hashtablePtr;

    hashtablePtr = (Tcl_HashTable *) ckalloc(sizeof(Tcl_HashTable));
    Tcl_InitHashTable(hashtablePtr, TCL_STRING_KEYS);
    return hashtablePtr;
}
```

```
#ifndef EXTENSION_LIB_H
#define EXTENSION_LIB_H
#include "tcl805.h"

/*
 * The CmdReturn structure is used by the subroutines to
 * pass back a success/failure code and a Tcl_Obj result.
 *
 * This is not an official Tcl standard return type. I
 * find this works well with commands that accept subcommands.
 */

typedef struct cmd_return {
    int status;
    Tcl_Obj *object;
} CmdReturn;

typedef struct cmd_Def {
    char *usage;
    int minArgCnt;
    int maxArgCnt;
} cmdDefinition;

/* Prototypes for the functions in the extensionLib */

void *getHashData (Tcl_Interp *, char*, Tcl_HashTable*);
CmdReturn *makeCmdReturn();
void setErrorReturns(Tcl_Interp *,
                     char *,      char *,      char *,      char *,
                     char *,      char *,      char *,      char *,
                     char *,      char *);
Tcl_HashTable *initHashTable ();

#endif EXTENSION_LIB_H
```

```

/* -- Mode: C; tab-width: 4; -*- */
/***** Java Runtime Interface *****
 * Copyright (c) 1996 Netscape Communications Corporation. All rights reserved.
***** */

#ifndef JRI_H
#define JRI_H

#include "jri_md.h"
#include <stddef.h>
#include <stdlib.h>
#include <stdarg.h>

#ifdef __cplusplus
extern "C" {
#endif

/***** Types *****
 * Types
***** */

typedef void* JRIRef;

typedef struct JРИGlobal* JРИGlobalRef;

typedef struct JРИNativeInterface JРИNativeInterface;

typedef const JРИNativeInterface* JRIEnv;

typedef struct JРИFieldThunk JРИFieldThunk;

typedef struct JРИMethodThunk JРИMethodThunk;

/* convenience types: */
typedef JRIRef jref;
typedef JRIRef jbooleanArray;
typedef JRIRef jbyteArray;
typedef JRIRef jcharArray;
typedef JRIRef jshortArray;
typedef JRIRef jintArray;
typedef JRIRef jlongArray;
typedef JRIRef jfloatArray;
typedef JRIRef jdoubleArray;
typedef JRIRef jobjectArray;
typedef JRIRef jstringArray;
typedef JRIRef jarrayArray;

typedef union JРИValue {
    jbool z;
    jbyte b;
    jchar c;
    jshort s;
    jint i;
    jlong l;
    jfloat f;
    jdouble d;
}

```

```

        jref           r;
} JRIValue;

typedef enum JRIMethodThunkType {
    JRIMethodThunkType_NameAndSig
} JRIMethodThunkType;

struct JRIMethodThunk {
    JRIMethodThunkType          type;
    void*                      data0;
    void*                      data1;
};

typedef enum JRIBoolean {
    JRIFalse      = 0,
    JРИTrue       = 1
} JRIBoolean;

typedef struct JRINativeInfo {
    char*            nativeMethodName; /* input */
    char*            nativeMethodSig;   /* input */
    void*            nativeMethodProc; /* input */
} JRINativeInfo;

#define JRIConstructorMethodName      "<init>"

/*********************  

 * Signature Construction Macros  

 *******************/  

/*  

** These macros can be used to construct signature strings. Hopefully their  

names  

** are a little easier to remember than the single character they correspond to.  

** For example, to specify the signature of the method:  

**  

**     public int read(byte b[], int off, int len);  

**  

** you could write something like this in C:  

**  

**     char* readSig = JRISigMethod(JRISigArray(JRISigByte)  

**                                JRISigInt  

**                                JRISigInt) JRISigInt;  

**  

** Of course, don't put commas between the types.  

*/
#define JRISigArray(T)      "[" T
#define JRISigByte          "B"
#define JRISigChar          "C"
#define JRISigClass(name)   "L" name ";"
#define JRISigFloat         "F"
#define JRISigDouble        "D"
#define JRISigMethod(args)  "(" args ")"
#define JRISigNoArgs        ""
#define JRISigInt           "I"
#define JRISigLong          "J"
#define JRISigShort          "S"

```

```

#define JRISigVoid           "V"
#define JRISigBoolean        "Z"

/*****
 * Environments
 *****/
extern JRI_PUBLIC_API(JRIEnv*)
JRI_GetCurrentEnv(void);

/*
** LoadClass borrows the buffer that you hand to it, so it will copy it
** if it needs to. This is useful when defining a class from static class
** data.
*/
typedef jref
(*JRI_LoadClass_t)(JRIEnv* env, const char* buf, jsize bufLen);

/*
** Returns a jref to a class object from a fully qualified name (package
** names delimited by '/' and the class name). If the name begins with
** '[' (the array signature character), an array class is returned.
*/
typedef jref
(*JRI_FindClass_t)(JRIEnv* env, const char* name);

/* Working with Exceptions */

typedef void
(*JRI_Throw_t)(JRIEnv* env, jref obj);

typedef void
(*JRI_ThrowNew_t)(JRIEnv* env, jref clazz, const char* message);

typedef jref
(*JRI_ExceptionOccurred_t)(JRIEnv* env);

typedef void
(*JRI_ExceptionDescribe_t)(JRIEnv* env);

typedef void
(*JRI_ExceptionClear_t)(JRIEnv* env);

/*****
 * References
 *****/
typedef JRIGlobalRef
(*JRI_NewGlobalRef_t)(JRIEnv* env, jref ref);

typedef void
(*JRI_DisposeGlobalRef_t)(JRIEnv* env, JRIGlobalRef ref);

typedef jref
(*JRI_GetGlobalRef_t)(JRIEnv* env, JRIGlobalRef globalRef);

typedef void

```

```

(*JRI_SetGlobalRef_t) (JRIEnv* env, JРИGlobalRef globalRef, jref value);

typedef jbool
(*JRI_IsSameObject_t) (JRIEnv* env, jref r1, jref r2);

/***** Object Operations *****/
typedef jref
(*JRI_NewObject_t) (JRIEnv* env, jref clazz, JRIMethodThunk* method, ...);

typedef jref
(*JRI_NewObjectA_t) (JRIEnv* env, jref clazz, JRIMethodThunk* method,
                      JRIValue* args);

typedef jref
(*JRI_NewObjectV_t) (JRIEnv* env, jref clazz, JRIMethodThunk* method,
                      va_list args);

typedef jref
(*JRI_GetObjectClass_t) (JRIEnv* env, jref obj);

typedef jbool
(*JRI_IsInstanceOf_t) (JRIEnv* env, jref obj, jref clazz);

/***** Accessing Public Fields of Objects ****/

typedef jref
(*JRI_GetField_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jbool
(*JRI_GetField_boolean_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jbyte
(*JRI_GetField_byte_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jchar
(*JRI_GetField_char_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jshort
(*JRI_GetField_short_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jint
(*JRI_GetField_int_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jlong
(*JRI_GetField_long_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jfloat
(*JRI_GetField_float_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

typedef jdouble
(*JRI_GetField_double_t) (JRIEnv* env, jref obj, JRIFieldThunk* field);

```

```

/***********************/

typedef void
(*JRI_SetField_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jref value);

typedef void
(*JRI_SetField_boolean_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jbool
value);

typedef void
(*JRI_SetField_byte_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jbyte
value);

typedef void
(*JRI_SetField_char_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jchar
value);

typedef void
(*JRI_SetField_short_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jshort
value);

typedef void
(*JRI_SetField_int_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jint value);

typedef void
(*JRI_SetField_long_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jlong
value);

typedef void
(*JRI_SetField_float_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jfloat
value);

typedef void
(*JRI_SetField_double_t)(JRIEnv* env, jref obj, JRIFieldThunk* field, jdouble
value);

/***********************/

/* Calling Public Dynamic Methods of Objects */

typedef JRIValue
(*JRI_CallMethod_t)(JRIEnv* env, jref obj, JRIMethodThunk* method, ...);

typedef JRIValue
(*JRI_ApplyMethodV_t)(JRIEnv* env, jref obj, JRIMethodThunk* method, va_list
args);

typedef JRIValue
(*JRI_ApplyMethod_t)(JRIEnv* env, jref obj, JRIMethodThunk* method,
                     JRIValue* valueArray);

/******************
 * Class Operations
 ******************/

/*
** Determines whether the first class is a subclass of the second, or

```

```

** whether it has the second class as one of its interfaces.
*/
typedef jbool
(*JRI_IsSubclassOf_t)(JRIEnv* env, jref clazz, jref super);

/***********************/

/* Accessing Public Static Fields of Objects */

typedef jref
(*JRI_GetStaticField_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jbool
(*JRI_GetStaticField_boolean_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jbyte
(*JRI_GetStaticField_byte_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jchar
(*JRI_GetStaticField_char_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jshort
(*JRI_GetStaticField_short_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jint
(*JRI_GetStaticField_int_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jlong
(*JRI_GetStaticField_long_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jfloat
(*JRI_GetStaticField_float_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

typedef jdouble
(*JRI_GetStaticField_double_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field);

/***********************/

typedef void
(*JRI_SetStaticField_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                      jref value);

typedef void
(*JRI_SetStaticField_boolean_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                                jbool value);

typedef void
(*JRI_SetStaticField_byte_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                            jbyte value);

typedef void
(*JRI_SetStaticField_char_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                            jchar value);

typedef void
(*JRI_SetStaticField_short_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                             jshort value);

```

```

typedef void
(*JRI_SetStaticField_int_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                           jint value);

typedef void
(*JRI_SetStaticField_long_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                            jlong value);

typedef void
(*JRI_SetStaticField_float_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                             jfloat value);

typedef void
(*JRI_SetStaticField_double_t)(JRIEnv* env, jref clazz, JRIFieldThunk* field,
                               jdouble value);

/********************************************/

/* Calling Public Static Methods of Objects */

typedef JRIValue
(*JRI_CallStaticMethod_t)(JRIEnv* env, jref clazz, JRIMethodThunk* method, ...);

typedef JRIValue
(*JRI_ApplyStaticMethodV_t)(JRIEnv* env, jref clazz, JRIMethodThunk* method,
                           va_list args);

typedef JRIValue
(*JRI_ApplyStaticMethod_t)(JRIEnv* env, jref clazz, JRIMethodThunk* method,
                           JRIValue* valueArray);

/********************************************/
 * String Operations
/********************************************/

/* Unicode Interface */

typedef jref
(*JRI_NewString_t)(JRIEnv* env, const jchar* bytes, jsizelength);

typedef jsizelength
(*JRI_GetStringLength_t)(JRIEnv* env, jref string);

/* This returns a const jchar* pointer directly into the string's contents: */
typedef const jchar*
(*JRI_GetStringChars_t)(JRIEnv* env, jref string);

/* Mallocs a C string that must be freed by caller: */
typedef jchar*
(*JRI_CopyString_t)(JRIEnv* env, jref string);

/* UTF Interface */

typedef jref
(*JRI_NewStringUTF_t)(JRIEnv* env, const char* bytes, jsizelength);

```

```

typedef jsize
(*JRI_GetStringUTFLength_t) (JRIEnv* env, jref string);

/* Mallocs a UTF C string that must be freed by caller: */
typedef char*
(*JRI_CopyStringUTF_t) (JRIEnv* env, jref string);

/********************* Scalar Array Operations ********************/
typedef jref
(*JRI_NewScalarArray_t) (JRIEnv* env, jsize length, const jbyte* bytes);

typedef jsize
(*JRI_GetScalarArrayLength_t) (JRIEnv* env, jref array);

typedef jbyte*
(*JRI_GetScalarArrayData_t) (JRIEnv* env, jref array);

/********************* Object Array Operations ********************/
typedef jref
(*JRI_NewObjectArray_t) (JRIEnv* env, jsize length, jref elementClass,
                         jref initialElement);

typedef jsize
(*JRI_GetObjectArrayLength_t) (JRIEnv* env, jref array);

typedef jref
(*JRI_GetObjectArrayElement_t) (JRIEnv* env, jref array, jsize index);

typedef void
(*JRI_SetObjectArrayElement_t) (JRIEnv* env, jref array, jsize index,
                                jref value);

/********************* Native Bootstrap ********************/
/*
** This routine is used by the generated stub code to look up field
** positions and method identifiers for native access and invocation.
*/
typedef void
(*JRI_RegisterNatives_t) (JRIEnv* env, jref clazz,
                           JRINativeInfo* nativeInfoArray);

typedef void
(*JRI_UnregisterNatives_t) (JRIEnv* env, jref clazz);

/********************* JRIFieldThunk ********************/
struct JRIFieldThunk {
    void*           data;

```

```

        JRI_GetField_t      get; /* cast this to the right accessor type before
calling */
        JRI_SetField_t      set; /* cast this to the right accessor type before
calling */
};

struct JRINativeInterface {
    void*
    void*
    void*
        JRI_LoadClass_t
        JRI_FindClass_t
        JRI_Throw_t
        JRI_ThrowNew_t
        JRI_ExceptionOccurred_t
        JRI_ExceptionDescribe_t
        JRI_ExceptionClear_t
        JRI_NewGlobalRef_t
        JRI_DisposeGlobalRef_t
        JRI_GetGlobalRef_t
        JRI_SetGlobalRef_t
        JRI_IsSameObject_t
        JRI_NewObject_t
        JRI_NewObjectA_t
        JRI_NewObjectV_t
        JRI_GetObjectClass_t
        JRI_IsInstanceOf_t
        JRI_GetField_t
        JRI_GetField_boolean_t
        JRI_GetField_byte_t
        JRI_GetField_char_t
        JRI_GetField_short_t
        JRI_GetField_int_t
        JRI_GetField_long_t
        JRI_GetField_float_t
        JRI_GetField_double_t
        JRI_SetField_t
        JRI_SetField_boolean_t
        JRI_SetField_byte_t
        JRI_SetField_char_t
        JRI_SetField_short_t
        JRI_SetField_int_t
        JRI_SetField_long_t
        JRI_SetField_float_t
        JRI_SetField_double_t
        JRI_CallMethod_t
        JRI_ApplyMethodV_t
        JRI_ApplyMethod_t
        JRI_IsSubclassOf_t
        JRI_GetStaticField_t
        JRI_GetStaticField_boolean_t
        JRI_GetStaticField_byte_t
        JRI_GetStaticField_char_t
        JRI_GetStaticField_short_t
        JRI_GetStaticField_int_t
        JRI_GetStaticField_long_t
        JRI_GetStaticField_float_t
        Reserved0;
        Reserved1;
        Reserved2;
        LoadClass;
        FindClass;
        Throw;
        ThrowNew;
        ExceptionOccurred;
        ExceptionDescribe;
        ExceptionClear;
        NewGlobalRef;
        DisposeGlobalRef;
        GetGlobalRef;
        SetGlobalRef;
        IsSameObject;
        NewObject;
        NewObjectA;
        NewObjectV;
        GetObjectClass;
        IsInstanceOf;
        GetField;
        GetField_boolean;
        GetField_byte;
        GetField_char;
        GetField_short;
        GetField_int;
        GetField_long;
        GetField_float;
        GetField_double;
        SetField;
        SetField_boolean;
        SetField_byte;
        SetField_char;
        SetField_short;
        SetField_int;
        SetField_long;
        SetField_float;
        SetField_double;
        CallMethod;
        ApplyMethodV;
        ApplyMethod;
        IsSubclassOf;
        GetStaticField;
        GetStaticField_boolean;
        GetStaticField_byte;
        GetStaticField_char;
        GetStaticField_short;
        GetStaticField_int;
        GetStaticField_long;
        GetStaticField_float;

```

```

JRI_GetStaticField_double_t      GetStaticField_double;
JRI_SetStaticField_t            SetStaticField;
JRI_SetStaticField_boolean_t    SetStaticField_boolean;
JRI_SetStaticField_byte_t       SetStaticField_byte;
JRI_SetStaticField_char_t       SetStaticField_char;
JRI_SetStaticField_short_t     SetStaticField_short;
JRI_SetStaticField_int_t        SetStaticField_int;
JRI_SetStaticField_long_t       SetStaticField_long;
JRI_SetStaticField_float_t      SetStaticField_float;
JRI_SetStaticField_double_t     SetStaticField_double;
JRI_CallStaticMethod_t          CallStaticMethod;
JRI_ApplyStaticMethodV_t        ApplyStaticMethodV;
JRI_ApplyStaticMethod_t         ApplyStaticMethod;
JRI_NewString_t                 NewString;
JRI_GetStringLength_t          GetStringLength;
JRI_GetStringChars_t           GetStringChars;
JRI_CopyString_t                CopyString;
JRI_NewStringUTF_t              NewStringUTF;
JRI_GetStringUTFLength_t        GetStringUTFLength;
JRI_CopyStringUTF_t             CopyStringUTF;
JRI_NewScalarArray_t            NewScalarArray;
JRI_GetScalarArrayLength_t      GetScalarArrayLength;
JRI_GetScalarArrayData_t        GetScalarArrayData;
JRI_NewObjectArray_t            NewObjectArray;
JRI_GetObjectArrayLength_t      GetObjectArrayLength;
JRI_GetObjectArrayElement_t     GetObjectArrayElement;
JRI_SetObjectArrayElement_t     SetObjectArrayElement;
JRI_RegisterNatives_t          RegisterNatives;
JRI_UnregisterNatives_t         UnregisterNatives;
};

/********************************************/

/*
** LoadClass borrows the buffer that you hand to it, so it will Copy it
** if it needs to. This is useful when defining a class from static class
** data.
*/
#define JRI_LoadClass(env, buf, bufLen) \
    (((*(env))->LoadClass)(env, buf, bufLen))

/*
** Returns a jref to a class object from a fully qualified name (package
** names delimited by '/' and the class name). If the name begins with
** '[' (the array signature character), an array class is returned.
*/
#define JRI_FindClass(env, name) \
    (((*(env))->FindClass)(env, name))

/* Working with Exceptions */

#define JRI_Throw(env, obj) \
    (((*(env))->Throw)(env, obj))

#define JRI_ThrowNew(env, clazz, message) \
    (((*(env))->ThrowNew)(env, clazz, message))

```

```

#define JRI_ExceptionOccurred(env)          \
    (((*(env))->ExceptionOccurred)(env))

#define JRI_ExceptionDescribe(env)         \
    (((*(env))->ExceptionDescribe)(env))

#define JRI_ExceptionClear(env)           \
    (((*(env))->ExceptionClear)(env))

/*********************  

 * References  

*****  

****/
```

```

#define JRI_NewGlobalRef(env, ref)          \
    (((*(env))->NewGlobalRef)(env, ref))

#define JRI_DisposeGlobalRef(env, ref)       \
    (((*(env))->DisposeGlobalRef)(env, ref))

#define JRI_GetGlobalRef(env, globalRef)     \
    (((*(env))->GetGlobalRef)(env, globalRef))

#define JRI_SetGlobalRef(env, globalRef, value) \
    (((*(env))->SetGlobalRef)(env, globalRef, value))

#define JRI_IsSameObject(env, r1, r2)        \
    (((*(env))->IsSameObject)(env, r1, r2))

/*********************  

 * Object Operations  

*****  

****/
```

```

#define JRI_NewObjectM(env)                ((*(env))->NewObject)
#define JRI_NewObject                  JRI_NewObjectM(env) /* hard coded 'env'  

*/
```

```

#define JRI_NewObjectA(env, clazz, method, args) \
    (((*(env))->NewObjectA)(env, clazz, method, args))

#define JRI_NewObjectV(env, clazz, method, args) \
    (((*(env))->NewObjectV)(env, clazz, method, args))

#define JRI_GetObjectClass(env, obj)        \
    (((*(env))->GetObjectClass)(env, obj))

#define JRI_IsInstanceOf(env, obj, clazz)   \
    (((*(env))->IsInstanceOf)(env, obj, clazz))

/*********************  

****/
```

```

/* Accessing Public Fields of Objects */

#define JRI_GetField(env, obj, fieldThunk)    \
    (((JRI_GetField_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_boolean(env, obj, fieldThunk) \
    (((JRI_GetField_boolean_t)(fieldThunk)->get)(env, obj, fieldThunk))
```

```

#define JRI_GetField_byte(env, obj, fieldThunk) \
    (((JRI_GetField_byte_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_char(env, obj, fieldThunk) \
    (((JRI_GetField_char_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_short(env, obj, fieldThunk) \
    (((JRI_GetField_short_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_int(env, obj, fieldThunk) \
    (((JRI_GetField_int_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_long(env, obj, fieldThunk) \
    (((JRI_GetField_long_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_float(env, obj, fieldThunk) \
    (((JRI_GetField_float_t)(fieldThunk)->get)(env, obj, fieldThunk))

#define JRI_GetField_double(env, obj, fieldThunk) \
    (((JRI_GetField_double_t)(fieldThunk)->get)(env, obj, fieldThunk))

/**********************/

#define JRI_SetField(env, obj, fieldThunk, value) \
    (((JRI_SetField_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_boolean(env, obj, fieldThunk, value) \
    (((JRI_SetField_boolean_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_byte(env, obj, fieldThunk, value) \
    (((JRI_SetField_byte_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_char(env, obj, fieldThunk, value) \
    (((JRI_SetField_char_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_short(env, obj, fieldThunk, value) \
    (((JRI_SetField_short_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_int(env, obj, fieldThunk, value) \
    (((JRI_SetField_int_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_long(env, obj, fieldThunk, value) \
    (((JRI_SetField_long_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_float(env, obj, fieldThunk, value) \
    (((JRI_SetField_float_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

#define JRI_SetField_double(env, obj, fieldThunk, value) \
    (((JRI_SetField_double_t)(fieldThunk)->set)(env, obj, fieldThunk, value))

/**********************/

/* Calling Public Dynamic Methods of Objects */

#define JRI_CallMethodM(env)          ((* (env)) ->CallMethod)

```

```

#define JRI_CallMethod                JRI_CallMethodM(env)      /* hard
coded 'env' */

#define JRI_ApplyMethodV(env, obj, methodThunk, args) \
    (((*(env))->ApplyMethodV)(env, obj, methodThunk, args))

#define JRI_ApplyMethod(env, obj, methodThunk, args) \
    (((*(env))->ApplyMethod)(env, obj, methodThunk, args))

/********************* Class Operations ********************/
/*
** Determines whether the first class is a subclass of the second, or
** whether it has the second class as one of its interfaces.
*/
#define JRI_IsSubclassOf(env, clazz, super) \
    (((*(env))->IsSubclassOf)(env, clazz, super))

/********************* Accessing Public Static Fields of Objects */
#define JRI_GetStaticField(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_boolean(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_boolean_t)(fieldThunk)->get)(env, clazz,
fieldThunk))

#define JRI_GetStaticField_byte(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_byte_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_char(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_char_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_short(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_short_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_int(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_int_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_long(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_long_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_float(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_float_t)(fieldThunk)->get)(env, clazz, fieldThunk))

#define JRI_GetStaticField_double(env, clazz, fieldThunk) \
    (((JRI_GetStaticField_double_t)(fieldThunk)->get)(env, clazz, fieldThunk))

/********************* Setters for Public Static Fields ********************/
#define JRI_SetStaticField(env, clazz, fieldThunk, value) \
    (((JRI_SetStaticField_t)(fieldThunk)->set)(env, clazz, fieldThunk, value))

```

```

#define JRI_SetStaticField_boolean(env, clazz, fieldThunk, value) \
    (((JRI_SetStaticField_boolean_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_byte(env, clazz, fieldThunk, value)      \
    (((JRI_SetStaticField_byte_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_char(env, clazz, fieldThunk, value)      \
    (((JRI_SetStaticField_char_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_short(env, clazz, fieldThunk, value)     \
    (((JRI_SetStaticField_short_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_int(env, clazz, fieldThunk, value)       \
    (((JRI_SetStaticField_int_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_long(env, clazz, fieldThunk, value)      \
    (((JRI_SetStaticField_long_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_float(env, clazz, fieldThunk, value)     \
    (((JRI_SetStaticField_float_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

#define JRI_SetStaticField_double(env, clazz, fieldThunk, value)    \
    (((JRI_SetStaticField_double_t)(fieldThunk)->set)(env, clazz, fieldThunk, \
value))

/***** **** */

/* Calling Public Static Methods of Objects */

#define JRI_CallStaticMethodM(env)           ((*(env))->CallStaticMethod)
#define JRI_CallStaticMethod               JRI_CallStaticMethodM(env) /*
hard coded 'env' */

#define JRI_ApplyStaticMethodV(env, clazz, method, args) \
    (((*(env))->ApplyStaticMethodV)(env, clazz, method, args))

#define JRI_ApplyStaticMethod(env, clazz, method, args) \
    (((*(env))->ApplyStaticMethod)(env, clazz, method, args))

/***** **** */
 * String Operations
***** **** */

/* Unicode Interface */

#define JRI_NewString(env, bytes, length) \
    (((*(env))->NewString)(env, bytes, length))

#define JRI_GetStringLength(env, string) \
    (((*(env))->GetStringLength)(env, string))

```

```

/* This returns a const jchar* pointer directly into the string's contents: */
#define JRI_GetStringChars(env, string) \
    (((*(env))->GetStringChars)(env, string))

/* Mallocs a C string that must be freed by caller: */
#define JRI_CopyString(env, string) \
    (((*(env))->CopyString)(env, string))

/* UTF Interface */

#define JRI_NewStringUTF(env, bytes, length) \
    (((*(env))->NewStringUTF)(env, bytes, length))

#define JRI_GetStringUTFLength(env, string) \
    (((*(env))->GetStringUTFLength)(env, string))

/* Mallocs a UTF C string that must be freed by caller: */
#define JRI_CopyStringUTF(env, string) \
    (((*(env))->CopyStringUTF)(env, string))

/*********************  

 * Scalar Array Operations  

 *******************/  

#define JRI_NewScalarArray(env, length, bytes) \
    (((*(env))->NewScalarArray)(env, length, bytes))

#define JRI_GetScalarArrayLength(env, array) \
    (((*(env))->GetScalarArrayLength)(env, array))

#define JRI_GetScalarArrayData(env, array) \
    (((*(env))->GetScalarArrayData)(env, array))

/*********************  

 * Specific Scalar Array Types  

 *******************/  

#define JRI_NewBooleanArray(env, length, initialValues) \
    JRI_NewScalarArray(env, length, (jbyte*)(initialValues))
#define JRI_GetBooleanArrayLength(env, array) \
    JRI_GetScalarArrayLength(env, array)
#define JRI_GetBooleanArrayData(env, array) \
    ((jbool*)JRI_GetScalarArrayData(env, array))

#define JRI_NewByteArray(env, length, initialValues) \
    JRI_NewScalarArray(env, length, (jbyte*)(initialValues))
#define JRI_GetByteArrayLength(env, array) \
    JRI_GetScalarArrayLength(env, array)
#define JRI_GetByteArrayData(env, array) \
    JRI_GetScalarArrayData(env, array)

#define JRI_NewCharArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jchar)),  

    (jbyte*)(initialValues))
#define JRI_GetCharArrayLength(env, array) \
    JRI_GetScalarArrayLength(env, array)

```

```

#define JRI_GetCharArrayData(env, array)           \
    ((jchar*)JRI_GetScalarArrayData(env, array))

#define JRI_NewShortArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jshort)), \
(jbyte*)(initialValues))
#define JRI_GetShortArrayLength(env, array)          \
    JRI_GetScalarArrayLength(env, array)
#define JRI_GetShortArrayData(env, array)            \
    ((jshort*)JRI_GetScalarArrayData(env, array))

#define JRI_NewIntArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jint)), \
(jbyte*)(initialValues))
#define JRI.GetIntArrayLength(env, array)           \
    JRI.GetScalarArrayLength(env, array)
#define JRI.GetIntArrayData(env, array)             \
    ((jint*)JRI.GetScalarArrayData(env, array))

#define JRI_NewLongArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jlong)), \
(jbyte*)(initialValues))
#define JRI.GetLongArrayLength(env, array)           \
    JRI.GetScalarArrayLength(env, array)
#define JRI.GetLongArrayData(env, array)             \
    ((jlong*)JRI.GetScalarArrayData(env, array))

#define JRI_NewFloatArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jfloat)), \
(jbyte*)(initialValues))
#define JRI.GetFloatArrayLength(env, array)           \
    JRI.GetScalarArrayLength(env, array)
#define JRI.GetFloatArrayData(env, array)             \
    ((jfloat*)JRI.GetScalarArrayData(env, array))

#define JRI_NewDoubleArray(env, length, initialValues) \
    JRI_NewScalarArray(env, ((length) * sizeof(jdouble)), \
(jbyte*)(initialValues))
#define JRI.GetDoubleArrayLength(env, array)           \
    JRI.GetScalarArrayLength(env, array)
#define JRI.GetDoubleArrayData(env, array)             \
    ((jdouble*)JRI.GetScalarArrayData(env, array))

/********************* * Object Array Operations *****/
#define JRI_NewObjectArray(env, length, elementClass, initialElement) \
    (((*(env))->NewObjectArray)(env, length, elementClass, initialElement))

#define JRI.GetObjectArrayLength(env, array)           \
    (((*(env))->GetObjectArrayLength)(env, array))

#define JRI.GetObjectArrayElement(env, array, index) \
    (((*(env))->GetObjectArrayElement)(env, array, index))

#define JRI_SetObjectArrayElement(env, array, index, value) \

```

```

(((*(env))->SetObjectArrayElement)(env, array, index, value))

/********************* Native Bootstrap ********************/
/* This routine is used by the generated stub code to look up field
** positions and method identifiers for native access and invocation.
*/
#define JRI_RegisterNatives(env, clazz, nativeInfoArray) \
    ((*(env))->RegisterNatives)(env, clazz, nativeInfoArray)

#define JRI_UnregisterNatives(env, clazz) \
    ((*(env))->UnregisterNatives)(env, clazz)

/********************* Glue Routines -- These are used to auto-initialize fields ********************/
* Glue Routines -- These are used to auto-initialize fields
***** */

JRI_PUBLIC_API(jref)
JRI_GetFieldByName(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jbool)
JRI_GetFieldByName_boolean(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jbyte)
JRI_GetFieldByName_byte(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jchar)
JRI_GetFieldByName_char(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jshort)
JRI_GetFieldByName_short(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jint)
JRI_GetFieldByName_int(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jlong)
JRI_GetFieldByName_long(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jfloat)
JRI_GetFieldByName_float(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jdouble)
JRI_GetFieldByName_double(JRIEnv* env, jref obj, JRIFieldThunk* field);

***** */

JRI_PUBLIC_API(void)
JRI_SetFieldByName(JRIEnv* env, jref obj, JRIFieldThunk* field, jref value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_boolean(JRIEnv* env, jref obj, JRIFieldThunk* field, jbool
value);

JRI_PUBLIC_API(void)

```

```
JRI_SetFieldByName_byte(JRIEnv* env, jref obj, JRIFieldThunk* field, jbyte value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_char(JRIEnv* env, jref obj, JRIFieldThunk* field, jchar value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_short(JRIEnv* env, jref obj, JRIFieldThunk* field, jshort value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_int(JRIEnv* env, jref obj, JRIFieldThunk* field, jint value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_long(JRIEnv* env, jref obj, JRIFieldThunk* field, jlong value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_float(JRIEnv* env, jref obj, JRIFieldThunk* field, jfloat value);

JRI_PUBLIC_API(void)
JRI_SetFieldByName_double(JRIEnv* env, jref obj, JRIFieldThunk* field, jdouble value);

/********************************************/

JRI_PUBLIC_API(jref)
JRI_GetStaticFieldByName(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jbool)
JRI_GetStaticFieldByName_boolean(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jbyte)
JRI_GetStaticFieldByName_byte(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jchar)
JRI_GetStaticFieldByName_char(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jshort)
JRI_GetStaticFieldByName_short(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jint)
JRI_GetStaticFieldByName_int(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jlong)
JRI_GetStaticFieldByName_long(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jfloat)
JRI_GetStaticFieldByName_float(JRIEnv* env, jref obj, JRIFieldThunk* field);

JRI_PUBLIC_API(jdouble)
JRI_GetStaticFieldByName_double(JRIEnv* env, jref obj, JRIFieldThunk* field);

/********************************************/
```

```
JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName(JRIEnv* env, jref obj, JRIFieldThunk* field, jref
value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_boolean(JRIEnv* env, jref obj, JRIFieldThunk* field,
jbool value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_byte(JRIEnv* env, jref obj, JRIFieldThunk* field, jbyte
value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_char(JRIEnv* env, jref obj, JRIFieldThunk* field, jchar
value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_short(JRIEnv* env, jref obj, JRIFieldThunk* field,
jshort value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_int(JRIEnv* env, jref obj, JRIFieldThunk* field, jint
value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_long(JRIEnv* env, jref obj, JRIFieldThunk* field, jlong
value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_float(JRIEnv* env, jref obj, JRIFieldThunk* field,
jfloat value);

JRI_PUBLIC_API(void)
JRI_SetStaticFieldByName_double(JRIEnv* env, jref obj, JRIFieldThunk* field,
jdouble value);

/****************************************
#ifndef __cplusplus
}
#endif
#endif /* JRI_H */
*****
```

```

/* -- Mode: C; tab-width: 4; -- */
/***** Java Runtime Interface - Machine Dependent Types *****
 * Copyright (c) 1996 Netscape Communications Corporation. All rights reserved.
***** */

#ifndef JRI_MD_H
#define JRI_MD_H

#ifdef __cplusplus
extern "C" {
#endif

/***** DLL Entry modifiers... ****/

#if defined(XP_PC)
#define EXPORTED           extern __declspec(dllexport)
#define JRI_PUBLIC_API(ResultType)      _declspec(dllexport) ResultType
#define JRI_CALLBACK          ResultType __cdecl __export __loadadds
#define JRI_CALLBACK          __loadadds
#endif
#ifndef XP_PC
#define JRI_PUBLIC_API(ResultType)      ResultType
#define JRI_CALLBACK          ResultType
#endif /* XP_PC */

#ifndef FAR             /* for non-Win16 */
#define FAR
#endif

/***** Java Scalar Types **/


typedef unsigned char    jbool;
typedef char              jbyte;
typedef short             jchar;
typedef short             jshort;
#ifndef IS_64 /* XXX ok for alpha, but not right on all 64-bit architectures */
typedef unsigned int     juint;
typedef int               jint;
#else
typedef unsigned long    juint;
typedef long              jint;
#endif
typedef float             jfloat;
typedef double            jdouble;

typedef juint             jsiz;
/***** jlong : long long (64-bit signed integer type) support.

```

```

*****
*/
/*
** Bit masking macros.  (n must be <= 31 to be portable)
*/
#define JRI_BIT(n)          (((juint)1 << (n)))
#define JRI_BITMASK(n)       (JRI_BIT(n) - 1)

#ifndef HAVE_LONG_LONG

#ifndef _WIN32
typedef long long          jlong;
typedef unsigned long long  julong;

#define jlong_MAXINT        0x7fffffffffffffLL
#define jlong_MININT        0x8000000000000000LL
#define jlong_ZERO           0x0LL

#else
typedef LONGLONG            jlong;
typedef DWORDLONG           julong;

#define jlong_MAXINT        0x7fffffffffffffi64
#define jlong_MININT        0x8000000000000000i64
#define jlong_ZERO           0x0i64

#endif

#endif

#define jlong_IS_ZERO(a)      ((a) == 0)
#define jlong_EQ(a, b)        ((a) == (b))
#define jlong_NE(a, b)        ((a) != (b))
#define jlong_GE_ZERO(a)      ((a) >= 0)
#define jlong_CMP(a, op, b)   ((a) op (b))

#define jlong_AND(r, a, b)    ((r) = (a) & (b))
#define jlong_OR(r, a, b)     ((r) = (a) | (b))
#define jlong_XOR(r, a, b)    ((r) = (a) ^ (b))
#define jlong_OR2(r, a)       ((r) = (r) | (a))
#define jlong_NOT(r, a)       ((r) = ~(a))

#define jlong_NEG(r, a)       ((r) = -(a))
#define jlong_ADD(r, a, b)    ((r) = (a) + (b))
#define jlong_SUB(r, a, b)    ((r) = (a) - (b))

#define jlong_MUL(r, a, b)    ((r) = (a) * (b))
#define jlong_DIV(r, a, b)    ((r) = (a) / (b))
#define jlong_MOD(r, a, b)    ((r) = (a) % (b))

#define jlong_SHL(r, a, b)    ((r) = (a) << (b))
#define jlong SHR(r, a, b)    ((r) = (a) >> (b))
#define jlong_USHR(r, a, b)   ((r) = (julong)(a) >> (b))
#define jlong_ISHL(r, a, b)   ((r) = ((jlong)(a)) << (b))

#define jlong_L2I(i, l)       ((i) = (int)(l))
#define jlong_L2UI(ui, l)     ((ui) = (unsigned int)(l))
#define jlong_L2F(f, l)       ((f) = (l))
#define jlong_L2D(d, l)       ((d) = (l))

```

```

#define jlong_I2L(l, i)      ((l) = (i))
#define jlong_UI2L(l, ui)    ((l) = (ui))
#define jlong_F2L(l, f)      ((l) = (f))
#define jlong_D2L(l, d)      ((l) = (d))

#define jlong_UDIVMOD(qp, rp, a, b) \
    (*qp) = ((julong)(a) / (b)), \
    *(rp) = ((julong)(a) % (b)))

#else /* !HAVE_LONG_LONG */

typedef struct {
#ifndef IS_LITTLE_ENDIAN
    juint lo, hi;
#else
    juint hi, lo;
#endif
} jlong;
typedef jlong                julong;

extern jlong jlong_MAXINT, jlong_MININT, jlong_ZERO;

#define jlong_IS_ZERO(a)      (((a).hi == 0) && ((a).lo == 0))
#define jlong_EQ(a, b)        (((a).hi == (b).hi) && ((a).lo == (b).lo))
#define jlong_NE(a, b)        (((a).hi != (b).hi) || ((a).lo != (b).lo))
#define jlong_GE_ZERO(a)     (((a).hi >> 31) == 0)

/*
 * NB: jlong_CMP and jlong_UCMP work only for strict relationals (<, >).
 */
#define jlong_CMP(a, op, b)   (((int32)(a).hi op (int32)(b).hi) || \
    (((a).hi == (b).hi) && ((a).lo op (b).lo)))
#define jlong_UCMP(a, op, b)  (((a).hi op (b).hi) || \
    (((a).hi == (b).hi) && ((a).lo op (b).lo)))

#define jlong_AND(r, a, b)    ((r).lo = (a).lo & (b).lo, \
    (r).hi = (a).hi & (b).hi)
#define jlong_OR(r, a, b)    ((r).lo = (a).lo | (b).lo, \
    (r).hi = (a).hi | (b).hi)
#define jlong_XOR(r, a, b)   ((r).lo = (a).lo ^ (b).lo, \
    (r).hi = (a).hi ^ (b).hi)
#define jlong_OR2(r, a)      ((r).lo = (r).lo | (a).lo, \
    (r).hi = (r).hi | (a).hi)
#define jlong_NOT(r, a)      ((r).lo = ~(a).lo, \
    (r).hi = ~(a).hi)

#define jlong_NEG(r, a)      ((r).lo = -(int32)(a).lo, \
    (r).hi = -(int32)(a).hi - ((r).lo != 0))
#define jlong_ADD(r, a, b) {
    jlong _a, _b;
    _a = a; _b = b;
    (r).lo = _a.lo + _b.lo;
    (r).hi = _a.hi + _b.hi + ((r).lo < _b.lo);
}

```

```

#define jlong_SUB(r, a, b) {
    jlong _a, _b;
    _a = a; _b = b;
    (r).lo = _a.lo - _b.lo;
    (r).hi = _a.hi - _b.hi - (_a.lo < _b.lo);
}

/*
 * Multiply 64-bit operands a and b to get 64-bit result r.
 * First multiply the low 32 bits of a and b to get a 64-bit result in r.
 * Then add the outer and inner products to r.hi.
 */
#define jlong_MUL(r, a, b) {
    jlong _a, _b;
    _a = a; _b = b;
    jlong_MUL32(r, _a.lo, _b.lo);
    (r).hi += _a.hi * _b.lo + _a.lo * _b.hi;
}

/* XXX _jlong_lo16(a) = ((a) << 16 >> 16) is better on some archs (not on mips)
*/
#define _jlong_lo16(a)          ((a) & JRI_BITMASK(16))
#define _jlong_hi16(a)          ((a) >> 16)

/*
 * Multiply 32-bit operands a and b to get 64-bit result r.
 * Use polynomial expansion based on primitive field element (1 << 16).
 */
#define jlong_MUL32(r, a, b) {
    juint _a1, _a0, _b1, _b0, _y0, _y1, _y2, _y3;
    _a1 = _jlong_hi16(a), _a0 = _jlong_lo16(a);
    _b1 = _jlong_hi16(b), _b0 = _jlong_lo16(b);
    _y0 = _a0 * _b0;
    _y1 = _a0 * _b1;
    _y2 = _a1 * _b0;
    _y3 = _a1 * _b1;
    _y1 += _jlong_hi16(_y0);           /* can't carry */
    _y1 += _y2;                      /* might carry */
    if (_y1 < _y2) _y3 += 1 << 16;   /* propagate */
    (r).lo = (_jlong_lo16(_y1) << 16) + _jlong_lo16(_y0);
    (r).hi = _y3 + _jlong_hi16(_y1);
}

/*
 * Divide 64-bit unsigned operand a by 64-bit unsigned operand b, setting *qp
 * to the 64-bit unsigned quotient, and *rp to the 64-bit unsigned remainder.
 * Minimize effort if one of qp and rp is null.
 */
#define jlong_UDIVMOD(qp, rp, a, b) jlong_udivmod(qp, rp, a, b)

extern JRI_PUBLIC_API(void)
jlong_udivmod(julong *qp, julong *rp, julong a, julong b);

#define jlong_DIV(r, a, b) {
    jlong _a, _b;
    juint _negative = (int32)(a).hi < 0;
    if (_negative) {

```

```

        jlong_NEG(_a, a);
    } else {
        _a = a;
    }
    if ((int32)(b).hi < 0) {
        _negative ^= 1;
        jlong_NEG(_b, b);
    } else {
        _b = b;
    }
    jlong_UDIVMOD(&(r), 0, _a, _b);
    if (_negative)
        jlong_NEG(r, r);
}

#define jlong_MOD(r, a, b) {
    jlong _a, _b;
    juint _negative = (int32)(a).hi < 0;
    if (_negative) {
        jlong_NEG(_a, a);
    } else {
        _a = a;
    }
    if ((int32)(b).hi < 0) {
        jlong_NEG(_b, b);
    } else {
        _b = b;
    }
    jlong_UDIVMOD(0, &(r), _a, _b);
    if (_negative)
        jlong_NEG(r, r);
}

/*
 * NB: b is a juint, not jlong or julong, for the shift ops.
 */
#define jlong_SHL(r, a, b) {
    if (b) {
        jlong _a;
        _a = a;
        if ((b) < 32) {
            (r).lo = _a.lo << (b);
            (r).hi = (_a.hi << (b)) | (_a.lo >> (32 - (b)));
        } else {
            (r).lo = 0;
            (r).hi = _a.lo << ((b) & 31);
        }
    } else {
        (r) = (a);
    }
}

/* a is an int32, b is int32, r is jlong */
#define jlong_ISHL(r, a, b) {
    if (b) {
        jlong _a;
        _a.lo = (a);

```

```

_a.hi = 0;
    if ((b) < 32) {
        (r).lo = (a) << (b);
        (r).hi = ((a) >> (32 - (b)));
    } else {
        (r).lo = 0;
        (r).hi = (a) << ((b) & 31);
    }
} else {
    (r).lo = (a);
    (r).hi = 0;
}
}

#define jlong_SHR(r, a, b) {
    if (b) {
        jlong _a;
        _a = a;
        if ((b) < 32) {
            (r).lo = (_a.hi << (32 - (b))) | (_a.lo >> (b));
            (r).hi = (int32)_a.hi >> (b);
        } else {
            (r).lo = (int32)_a.hi >> ((b) & 31);
            (r).hi = (int32)_a.hi >> 31;
        }
    } else {
        (r) = (a);
    }
}

#define jlong_USHR(r, a, b) {
    if (b) {
        jlong _a;
        _a = a;
        if ((b) < 32) {
            (r).lo = (_a.hi << (32 - (b))) | (_a.lo >> (b));
            (r).hi = _a.hi >> (b);
        } else {
            (r).lo = _a.hi >> ((b) & 31);
            (r).hi = 0;
        }
    } else {
        (r) = (a);
    }
}

#define jlong_L2I(i, l)      ((i) = (l).lo)
#define jlong_L2UI(ui, l)     ((ui) = (l).lo)
#define jlong_L2F(f, l)       { double _d; jlong_L2D(_d, l); (f) = (float) _d; }

#define jlong_L2D(d, l) {
    int32 _negative;
    jlong _absval;

    _negative = (l).hi >> 31;
    if (_negative) {
        jlong_NEG(_absval, l);
    }
}

```

```

    } else {
        _absval = l;
    }
    (d) = (double)_absval.hi * 4.294967296e9 + _absval.lo;
    if (_negative)
        (d) = -(d);
}

#define jlong_I2L(l, i)          ((l).hi = (i) >> 31, (l).lo = (i))
#define jlong_UI2L(l, ui)        ((l).hi = 0, (l).lo = (ui))
#define jlong_F2L(l, f)          { double _d = (double) f; jlong_D2L(l, _d); }

#define jlong_D2L(l, d) {
    int _negative;
    double _absval, _d_hi;
    jlong _lo_d;

    _negative = ((d) < 0);
    _absval = _negative ? -(d) : (d);

    (l).hi = (juint) (_absval / 4.294967296e9);
    (l).lo = 0;
    jlong_L2D(_d_hi, l);
    _absval -= _d_hi;
    _lo_d.hi = 0;
    if (_absval < 0) {
        _lo_d.lo = (juint) -_absval;
        jlong_SUB(l, l, _lo_d);
    } else {
        _lo_d.lo = (juint) _absval;
        jlong_ADD(l, l, _lo_d);
    }

    if (_negative)
        jlong_NEG(l, l);
}

#endif /* !HAVE_LONG_LONG */

/*********************************************************/
/*
** JDK Stuff -- This stuff is still needed while we're using the JDK
** dynamic linking strategy to call native methods.
*/
typedef union JRI_JDK_stack_item {
    /* Non pointer items */
    jint           i;
    jfloat          f;
    jint           o;
    /* Pointer items */
    void          *h;
    void          *p;
    unsigned char *addr;
#ifdef OSF1
    double         d;
    long           l;           /* == 64bits! */

```

```

#endif
} JRI_JDK_stack_item;

typedef union JRI_JDK_Java8Str {
    jint x[2];
    jdouble d;
    jlong l;
    void *p;
    float f;
} JRI_JDK_Java8;

#ifndef HAVE_ALIGNED_LONGLONGS
#define JRI_GET_INT64(_t,_addr) ( ((_t).x[0] = ((jint*)(_addr))[0]), \
                                ((_t).x[1] = ((jint*)(_addr))[1]), \
                                (_t).l )
#define JRI_SET_INT64(_t, _addr, _v) ( (_t).l = (_v), \
                                       ((jint*)(_addr))[0] = (_t).x[0], \
                                       ((jint*)(_addr))[1] = (_t).x[1] )
#else
#define JRI_GET_INT64(_t,_addr) (*(jlong*)(_addr))
#define JRI_SET_INT64(_t, _addr, _v) (*(jlong*)(_addr)) = (_v))
#endif

/* If double's must be aligned on doubleword boundaries then define this */
#ifndef HAVE_ALIGNED_DOUBLES
#define JRI_GET_DOUBLE(_t,_addr) ( ((_t).x[0] = ((jint*)(_addr))[0]), \
                                 ((_t).x[1] = ((jint*)(_addr))[1]), \
                                 (_t).d )
#define JRI_SET_DOUBLE(_t, _addr, _v) ( (_t).d = (_v), \
                                       ((jint*)(_addr))[0] = (_t).x[0], \
                                       ((jint*)(_addr))[1] = (_t).x[1] )
#else
#define JRI_GET_DOUBLE(_t,_addr) (*(jdouble*)(_addr))
#define JRI_SET_DOUBLE(_t, _addr, _v) (*(jdouble*)(_addr)) = (_v))
#endif

/****************************************
#ifdef __cplusplus
}
#endif
#endif /* JRI_MD_H */
/****************************************/

```

```

# Generated automatically from Makefile.in by configure.
PACKAGE          = plugext
VERSION          = 1.0
OBJJS            = plugext.o plugextCmd.o plugextCmdAZ.o NPN_wrapper.o plugInstCmd.o
plugInstCmdAZ.o extensionLib.o

-----
prefix           = /usr/local
exec_prefix      = ${prefix}

TCL_VERSION = 8.0

INSTALL          = /usr/bin/install -c
INSTALL_PROGRAM  = ${INSTALL}
INSTALL_DATA     = ${INSTALL} -m 644
SHLIB_CFLAGS    = -fPIC
SHLIB_SUFFIX    = .so
SHLIB_LD        = cc -shared
## HP cc sometimes requires -Aa for proper ansi compilation
TCL_CFLAGS      = -DXP_UNIX -g

LIB_RUNTIME_DIR = ${exec_prefix}/lib

INCLUDES         = -I${prefix}/include -Iinclude -I../Netscape/include

DLL              = $(PACKAGE)$(SHLIB_SUFFIX)
DLLDIR          = /usr/local/lib/${PACKAGE}${VERSION}

CSWITCHES       = -I. $(TCL_CFLAGS) $(SHLIB_CFLAGS) $(INCLUDES)

all: Makefile $(DLL) pkgIndex.tcl dlopen.so

# Makefile: Makefile.in config.status
#      $(SHELL) config.status

config.status: configure
      $(SHELL) config.status --recheck

$(DLL): $(OBJJS) plugAncill.so
      $(SHLIB_LD) -o $@ $(OBJJS)

plugAncill.so: plugAncill.o
      $(SHLIB_LD) -o $@ plugAncill.o

dlopen.so: dlopen.o
      $(SHLIB_LD) -o $@ dlopen.o

plugext.o: plugext.c
      $(CC) $(CSWITCHES) $(CPPFLAGS) -c plugext.c

plugextCmd.o: plugextCmd.c
      $(CC) $(CSWITCHES) $(CPPFLAGS) -c plugextCmd.c

plugextCmdAZ.o: plugextCmdAZ.c
      $(CC) $(CSWITCHES) $(CPPFLAGS) -c plugextCmdAZ.c

NPN_wrapper.o: NPN_wrapper.c

```

```
$ (CC) $(CSWITCHES) $(CPPFLAGS) -c NPN_wrapper.c

plugAncill.o: plugext.c
$ (CC) $(CSWITCHES) $(CPPFLAGS) -c plugAncill.c

plugInstCmd.o: plugInstCmd.c
$ (CC) $(CSWITCHES) $(CPPFLAGS) -c plugInstCmd.c

plugInstCmdAZ.o: plugInstCmdAZ.c
$ (CC) $(CSWITCHES) $(CPPFLAGS) -c plugInstCmdAZ.c

extensionLib.o: extensionLib.c
$ (CC) $(CSWITCHES) $(CPPFLAGS) -c extensionLib.c

pkgIndex.tcl:
(\ \
echo 'if {[catch {package require Tcl $(TCL_VERSION)}]} return';\
echo 'package ifneeded $(PACKAGE) $(VERSION)\'\
    [list load [file join $$dir $(DLL).$(VERSION)] $(PACKAGE)]'\\
) > pkgIndex.tcl

install: all
if test ! -d "$(DLLDIR)"; then mkdir "$(DLLDIR)"; fi
$(INSTALL_PROGRAM) $(DLL) "$(DLLDIR)/$(DLL).$(VERSION)"
$(INSTALL_DATA) pkgIndex.tcl "$(DLLDIR)/pkgIndex.tcl"

test: all
tclsh$(TCL_VERSION) testplugext.tcl

clean:
rm -f *.o *$(SHLIB_SUFFIX) core pkgIndex.tcl test.*

distclean: clean
rm -f Makefile config.cache config.log config.status
```

```

/* -*- Mode: C; tab-width: 4; -*- */
/*
 *  npapi.h $Revision: 1.1 $
 *  Netscape client plug-in API spec
 */

#ifndef _NPAPI_H_
#define _NPAPI_H_

#include "jri.h"           /* Java Runtime Interface */

/* XXX this needs to get out of here */
#if defined(__MWERKS__)
#ifndef XP_MAC
#define XP_MAC
#endif
#endif

/*
-----*/
/*          Plugin Version Constants          */
/*-----*/

#define NP_VERSION_MAJOR 0
#define NP_VERSION_MINOR 9

/*
-----*/
/*          Definition of Basic Types         */
/*-----*/

#ifndef _UINT16
typedef unsigned short uint16;
#endif
#ifndef _UINT32
#if defined(__alpha)
typedef unsigned int uint32;
#else /* __alpha */
typedef unsigned long uint32;
#endif /* __alpha */
#endif
#ifndef _INT16
typedef short int16;
#endif
#ifndef _INT32
#if defined(__alpha)
typedef int int32;
#else /* __alpha */
typedef long int32;
#endif /* __alpha */
#endif

#ifndef FALSE
#define FALSE (0)

```

```

#endif
#ifndef TRUE
#define TRUE (1)
#endif
#ifndef NULL
#define NULL (0L)
#endif

typedef unsigned char    NPBool;
typedef void*            NPEvent;
typedef int16             NPError;
typedef int16             NPReason;
typedef char*            NPMIMEType;

/*-----
 *          Structures and definitions
 *-----*/
/*
 *  NPP is a plug-in's opaque instance handle
 */
typedef struct _NPP
{
    void*      pdata;           /* plug-in private data */
    void*      ndata;           /* netscape private data */
} NPP_t;

typedef NPP_t*   NPP;

typedef struct _NPStream
{
    void*      pdata;           /* plug-in private data */
    void*      ndata;           /* netscape private data */
    const char* url;
    uint32     end;
    uint32     lastmodified;
    void*      notifyData;
} NPStream;

typedef struct _NPByteRange
{
    int32     offset;           /* negative offset means from the end */
    uint32     length;
    struct _NPByteRange* next;
} NPByteRange;

typedef struct _NPSavedData
{
    int32     len;
    void*     buf;
} NPSavedData;

```

```

typedef struct _NPRect
{
    uint16 top;
    uint16 left;
    uint16 bottom;
    uint16 right;
} NPRect;

#ifndef XP_UNIX
/*
 * Unix specific structures and definitions
 */
#include <X11/Xlib.h>

/*
 * Callback Structures.
 *
 * These are used to pass additional platform specific information.
 */
enum {
    NP_SETWINDOW = 1
};

typedef struct
{
    int32 type;
} NPAAnyCallbackStruct;

typedef struct
{
    int32          type;
    Display*       display;
    Visual*        visual;
    Colormap       colormap;
    unsigned int   depth;
} NPSetWindowCallbackStruct;

/*
 * List of variable names for which NPP_GetValue shall be implemented
 */
typedef enum {
    NPPVpluginNameString = 1,
    NPPVpluginDescriptionString
} NPPVariable;

/*
 * List of variable names for which NPN_GetValue is implemented by Mozilla
 */
typedef enum {
    NPNVxDisplay = 1,
    NPNVxtAppContext
} NPNVariable;

#endif /* XP_UNIX */

```

```

typedef struct _NPWindow
{
    void* window;           /* Platform specific window handle */
    uint32 x;               /* Position of top left corner relative */
    uint32 y;               /* to a netscape page. */
    uint32 width;           /* Maximum window size */
    uint32 height;
    NPRect clipRect;        /* Clipping rectangle in port coordinates */
                           /* Used by MAC only. */ */

#ifndef XP_UNIX
    void * ws_info;         /* Platform-dependent additonal data */
#endif /* XP_UNIX */
} NPWindow;

```

```

typedef struct _NPFullPrint
{
    NPBool pluginPrinted;   /* Set TRUE if plugin handled fullscreen */
                           /* printing */
}
NPBool printOne;           /* TRUE if plugin should print one copy */
                           /* to default printer */
}
void* platformPrint;       /* Platform-specific printing info */
} NPFullPrint;

```

```

typedef struct _NPEmbedPrint
{
    NPWindow window;
    void* platformPrint;    /* Platform-specific printing info */
} NPEmbedPrint;

```

```

typedef struct _NPPrint
{
    uint16 mode;             /* NP_FULL or NP_EMBED */
    union
    {
        NPFullPrint fullPrint; /* if mode is NP_FULL */
        NPEmbedPrint embedPrint; /* if mode is NP_EMBED */
    } print;
} NPPrint;

```

```

#ifndef XP_MAC
/*
 * Mac-specific structures and definitions.
 */

```

```

#include <Quickdraw.h>
#include <Events.h>

typedef struct NP_Port
{
    CGrafPtr port;           /* Grafport */
    int32 portx;             /* position inside the topmost window */
    int32 porty;
}

```

```

} NP_Port;

/*
 * Non-standard event types that can be passed to HandleEvent
 */
#define getFocusEvent      (osEvt + 16)
#define loseFocusEvent     (osEvt + 17)
#define adjustCursorEvent  (osEvt + 18)

#endif /* XP_MAC */

/*
 * Values for mode passed to NPP_New:
 */
#define NP_EMBED          1
#define NP_FULL           2

/*
 * Values for stream type passed to NPP_NewStream:
 */
#define NP_NORMAL          1
#define NP_SEEK             2
#define NP_ASFILE           3
#define NP_ASFILEONLY       4

#define NP_MAXREADY        (((unsigned) (~0) << 1) >> 1)

/*-----*/
/*          Error and Reason Code definitions          */
/*-----*/
/*
 *      Values of type NPError:
 */
#define NPERR_BASE          0
#define NPERR_NO_ERROR       (NPERR_BASE + 0)
#define NPERR_GENERIC_ERROR   (NPERR_BASE + 1)
#define NPERR_INVALID_INSTANCE_ERROR (NPERR_BASE + 2)
#define NPERR_INVALID_FUNCTABLE_ERROR (NPERR_BASE + 3)
#define NPERR_MODULE_LOAD_FAILED_ERROR (NPERR_BASE + 4)
#define NPERR_OUT_OF_MEMORY_ERROR (NPERR_BASE + 5)
#define NPERR_INVALID_PLUGIN_ERROR (NPERR_BASE + 6)
#define NPERR_INVALID_PLUGIN_DIR_ERROR (NPERR_BASE + 7)
#define NPERR_INCOMPATIBLE_VERSION_ERROR (NPERR_BASE + 8)
#define NPERR_INVALID_PARAM    (NPERR_BASE + 9)
#define NPERR_INVALID_URL      (NPERR_BASE + 10)
#define NPERR_FILE_NOT_FOUND   (NPERR_BASE + 11)
#define NPERR_NO_DATA          (NPERR_BASE + 12)
#define NPERR_STREAM_NOT_SEEKABLE (NPERR_BASE + 13)

/*
 *      Values of type NPReason:
 */
#define NPRES_BASE          0

```

```

#define NPRES_NETWORK_ERR          (NPRES_BASE + 0)
#define NPRES_USER_BREAK           (NPRES_BASE + 2)
#define NPRES_DONE                  (NPRES_BASE + 3)

/*
 *      Don't use these obsolete error codes any more.
 */
#define NP_NOERR  NP_NOERR_is_obsolete_use_NPERR_NO_ERROR
#define NP_EINVAL NP_EINVAL_is_obsolete_use_NPERR_GENERIC_ERROR
#define NP_EABORT NP_EABORT_is_obsolete_use_NPRES_USER_BREAK

/*-----*/
/*          Function Prototypes                      */
/*-----*/
#ifndef _WINDOWS && !defined(WIN32)
#define NP_LOADDDS _loaddds
#else
#define NP_LOADDDS
#endif

#ifndef __cplusplus
extern "C" {
#endif

/*
 * NPP_* functions are provided by the plugin and called by the navigator.
 */

#ifdef XP_UNIX
char*                                NPP_GetMIMEDescription(void);
NPError                               NPP_GetValue(void *, NPPVariable variable,
void *value);
#endif /* XP_UNIX */
NPError                               NPP_Initialize(void);
void                                 NPP_Shutdown(void);
NPError     NP_LOADDDS   NPP_New(NPMIMEType pluginType, NPP instance,
                           uint16 mode, int16 argc, char* argn[],
                           char* argv[], NPSavedData* saved);
NPError     NP_LOADDDS   NPP_Destroy(NPP instance, NPSavedData** save);
NPError     NP_LOADDDS   NPP_SetWindow(NPP instance, NPWindow* window);
NPError     NP_LOADDDS   NPP_NewStream(NPP instance, NPMIMEType type,
                           NPStream* stream, NPBool seekable,
                           uint16* stype);
NPError     NP_LOADDDS   NPP_DestroyStream(NPP instance, NPStream* stream,
                           NPReason reason);
int32      NP_LOADDDS   NPP_WriteReady(NPP instance, NPStream* stream);
int32      NP_LOADDDS   NPP_Write(NPP instance, NPStream* stream, int32 offset,
                           int32 len, void* buffer);
void       NP_LOADDDS   NPP_StreamAsFile(NPP instance, NPStream* stream,
                           const char* fname);
void       NP_LOADDDS   NPP_Print(NPP instance, NPPrint* platformPrint);
int16
void       NP_LOADDDS   NPP_HandleEvent(NPP instance, void* event);
NPP_URLNotify(NPP instance, const char* url,

```

```

NPReason reason, void* notifyData);
jref NPP_GetJavaClass(void);

/*
 * NPN_* functions are provided by the navigator and called by the plugin.
 */

#ifndef XP_UNIX
NPError NPN_GetValue(NPP instance, NPNVariable
variable,
                     void *value);

#endif /* XP_UNIX */
void NPN_Version(int* plugin_major, int* plugin_minor,
                 int* netscape_major, int*
netscape_minor);
NPError NPN_GetURLNotify(NPP instance, const char* url,
                         const char* target, void* notifyData);
NPError NPN_GetURL(NPP instance, const char* url,
                   const char* target);
NPError NPN_PostURLNotify(NPP instance, const char* url,
                           const char* target, uint32 len, const
char* buf,
                           NPError NPN_PostURL(NPP instance, const char* url,
                           const char* target, uint32 len, const
char* buf,
                           NPError NPN_RequestRead(NPStream* stream, NPByteRange*
rangeList);
NPError NPN_NewStream(NPP instance, NPMIMEType type,
                      const char* target, NPStream***
stream);
int32 NPN_Write(NPP instance, NPStream* stream, int32
len,
                 void* buffer);
NPError NPN_DestroyStream(NPP instance, NPStream* stream,
                           NPReason reason);
void NPN_Status(NPP instance, const char* message);
const char* NPN_UserAgent(NPP instance);
void* NPN_MemAlloc(uint32 size);
void NPN_MemFree(void* ptr);
uint32 NPN_MemFlush(uint32 size);
void NPN_ReloadPlugins(NPBool reloadPages);
JRIEnv* NPN_GetJavaEnv(void);
jref NPN_GetJavaPeer(NPP instance);

#endif __cplusplus
} /* end extern "C" */
#endif

#endif /* _NPAPI_H_ */

```

```

#if defined (_WIN32)
#include <windows.h>
#include <stdio.h>
#endif
#include <stdlib.h>
#include <string.h>
#include "npupp.h"
#include "plugextInt.h"
extern Tcl_HashTable *plugext_hashtablePtr;

#include <stdarg.h>

/* FOR DEBUGGING PURPOSES - takes a set of chars and makes a null terminated
   string
*/
static char tmpString[512];

FILE *logFile = NULL;

void MyOpenit () {
    logFile = fopen("NPNLog", "a");
}

void MyCloseIt () {
    fclose(logFile);
}

void MyPrint(char *fmt, ...) {
    va_list ap;

    MyOpenit();

    va_start(ap, fmt);

    vfprintf(logFile, fmt, ap);
    MyCloseIt();
}

char * makeNullTerm(char *input, int len) {

    if (len > 511) len = 511;

    memcpy(tmpString, input, len);
    tmpString[len] = 0;
    return tmpString;
}

#endif XP_UNIX
NPError PlugGetValue(NPP_NPPhandle, NPNVariable variable, void *value) {
    MyPrint( "--- PlugGetValue(NPP_NPPhandle, NPNVariable variable, called %xx
%d %xx\n",
            NPPhandle, variable, value);
    fflush(stdout);
}

```

```

        }
#endif /* XP_UNIX */

void PlugVersion(int* plugin_major, int* plugin_minor,
                 int* netscape_major, int* netscape_minor) {
    MyPrint( "--- PlugVersion(int* plugin_major, int* plugin_minor, called %d
%s\n",
            plugin_major, plugin_minor);
    fflush(stdout);
    *plugin_minor = 9;
    *plugin_major = 0;
}

NPError PlugGetURLNotify(NPP NPPhandle, const char* url, const char* target,
void* notifyData) {
    MyPrint( "--- PlugGetURLNotify(NPP NPPhandle, const char* url, called %xx
%s %s %xx\n",
            NPPhandle, url, target, notifyData);
    fflush(stdout);
    return (0);
}

NPError PlugGetURL(NPP NPPhandle, const char* url, const char* target) {
    MyPrint( "--- PlugGetURL(NPP NPPhandle, const char* url, called %xx %s
%s\n",
            NPPhandle, url, target);
    fflush(stdout);
    return (0);
}

NPError PlugPostURLNotify(NPP NPPhandle, const char* url,
                           const char* target, uint32 len,
                           const char* buf, NPBool file,
                           void* notifyData) {
    MyPrint( "--- PlugPostURLNotify(NPP NPPhandle, const char* url, called %xx
%s %s %d %s %xx %xx\n",
            NPPhandle, url, target, len, buf, file, notifyData);
    fflush(stdout);
    return (0);
}

NPError PlugPostURL(NPP NPPhandle, const char* url,
                     const char* target, uint32 len,
                     const char* buf, NPBool file) {
    MyPrint( "--- PlugPostURL(NPP NPPhandle, const char* url, called %xx %s %s
%d %s %xx\n",
            NPPhandle, url, target, len, buf, file);
    fflush(stdout);
    return (0);
}

NPError PlugRequestRead(NPStream* stream, NPByteRange* rangeList) {
    MyPrint( "--- PlugRequestRead(NPStream* stream, NPByteRange* rangeList %xx
%xx called\n",
            stream, rangeList);
    fflush(stdout);
    return (0);
}

```

```

NPError PlugNewStream(NPP NPPhandle, NPMIMEType type,
                      const char* target, NPStream** stream) {
    NPStream *str;
    Tcl_HashEntry *hashEntryPtr;
    Tcl_HashSearch hashSearch;
    InstanceData *instanceData;

    hashEntryPtr = Tcl_FirstHashEntry(plugext_hashtablePtr, &hashSearch);
    instanceData = (InstanceData *) Tcl_GetHashValue(hashEntryPtr);

    while (instanceData->handle != NPPhandle) {
        hashEntryPtr = Tcl_NextHashEntry(&hashSearch);
        if (hashEntryPtr == NULL) {
            return -1;
        }
        instanceData = (InstanceData *) Tcl_GetHashValue(hashEntryPtr);
    }

    *stream = (NPStream *) Tcl_Alloc(sizeof (NPStream));
    str = *stream;
    MyPrint( "---PlugNewStream(NPP instance, %xx NPMIMEType type %s, target:
%s *stream: %xx INstance::pdata: %xx ndata: %xx\n",
    NPPhandle, type, target, stream, NPPhandle->pdata, NPPhandle->ndata);
    fflush(stdout);
    str->pdata = instanceData;
    str->url = "Test";
    MyPrint( "---PlugNewStream post *streams: %xx\n", str->pdata);
    fflush(stdout);
    return 0;
}

int32 PlugWrite(NPP NPPhandle, NPStream* stream, int32 len,
                 void* buffer) {
    InstanceData *instanceData;
    instanceData = stream->pdata;
    if (instanceData->readBuffer == NULL) {
        instanceData->readBuffer = Tcl_Alloc(len*10);
        instanceData->readSize = len*10;
        instanceData->readOffset = 0;
        instanceData->readLen = 0;
    }

    if ((instanceData->readOffset + len) > instanceData->readSize) {
        instanceData->readBuffer = realloc(instanceData->readBuffer,
instanceData->readSize * 2);
        instanceData->readSize = instanceData->readSize * 2;
    }
    memcpy(instanceData->readBuffer + instanceData->readLen, buffer, len);
    instanceData->readLen += len;

    MyPrint( "--- PlugWrite(NPP NPPhandle %xx, NPStream* stream %xx, int32 len
%xx, buf: %s called\n",
    NPPhandle, stream, len, makeNullTerm(buffer, len) );
    MyPrint( "--- PlugWrite stream->pdata: %xx", stream->pdata);
    fflush(stdout);
}

```

```

    return (0);
}

NPError PlugDestroyStream(NPP NPPhandle, NPStream* stream,
    NPReason reason) {
    MyPrint( "--- PlugDestroyStream(NPP NPPhandle, NPStream* stream,
called\n");
    fflush(stdout);
    return (0);
}

void PlugStatus(NPP NPPhandle, const char* message) {
    MyPrint( "--- PlugStatus(NPP NPPhandle, const char* message); called\n");
    MyPrint( "PlugStatus message: %s\n", message);
    fflush(stdout);
}

const char* PlugUserAgent(NPP NPPhandle) {
    MyPrint( "--- char* PlugUserAgent(NPP NPPhandle); called\n");
    fflush(stdout);
    return ("mozilla 3.0");
}

void* PlugMemAlloc(uint32 size) {
    MyPrint( "--- PlugMemAlloc(uint32 size) %d; called\n", size);
    fflush(stdout);
    return (Tcl_Alloc(size));
}

void PlugMemFree(void* ptr) {
    MyPrint( "--- PlugMemFree(void* ptr); called\n");
    fflush(stdout);
    Tcl_Free(ptr);
}

uint32 PlugMemFlush(uint32 size) {
    MyPrint( "--- PlugMemFlush(uint32 size) \n");
    fflush(stdout);
    return (0);
}

void PlugReloadPlugins(NPBool reloadPages){
    MyPrint( "--- PlugReloadPlugins(NPBool reloadPages)\n");
    fflush(stdout);
}

JRIEnv* PlugGetJavaEnv(void) {
    MyPrint( "--- PlugGetJavaEnv(void)\n");
    fflush(stdout);
    return (NULL);
}

jref PlugGetJavaPeer(NPP NPPhandle){
    MyPrint( "--- PlugGetJavaPeer(NPP NPPhandle)\n");
    fflush(stdout);
    return (NULL);
}

```

```
int setPlugextEntryPoints(NPNetscapeFuncs *n) {  
  
    MyPrint( "---- hit NP_GetEntryPoints: %d %xx\n", n->size, n); fflush(stdout);  
    MyPrint( "---- hit NP_GetEntryPoints: %xx\n", PlugUserAgent); fflush(stdout);  
    MyPrint( "---- hit NP_GetEntryPoints: %xx\n", PlugMemAlloc); fflush(stdout);  
    MyPrint( "---- hit NP_GetEntryPoints: %xx\n", PlugMemFlush); fflush(stdout);  
    MyPrint( "---- hit NP_GetEntryPoints: %xx\n", PlugMemFree); fflush(stdout);  
    if (n->size < sizeof(NPNetscapeFuncs)) {  
        return(NPERR_INVALID_FUNCTABLE_ERROR);  
    }  
    n->geturl = PlugGetURL ;  
    n->posturl = PlugPostURL ;  
    n->requestread = PlugRequestRead ;  
    n->newstream = PlugNewStream ;  
    n->write = PlugWrite ;  
    n->destroystream = PlugDestroyStream ;  
    n->status = PlugStatus ;  
    n->uagent = PlugUserAgent ;  
    n->memalloc = PlugMemAlloc ;  
    n->memfree = PlugMemFree ;  
    n->memflush = PlugMemFlush ;  
    n->reloadplugins = PlugReloadPlugins ;  
    n->getJavaEnv = PlugGetJavaEnv ;  
    n->getJavaPeer = PlugGetJavaPeer ;  
    n->geturlnotify = PlugGetURLNotify ;  
    n->posturlnotify = PlugPostURLNotify ;  
#ifdef XP_UNIX  
    n->getvalue = PlugGetValue ;  
#endif  
}
```

```
/*
Forward declarations for NPN_wrapper.c
*/

#ifndef NPN_WRAPPER_H
#define NPN_WRAPPER_H

#ifndef _NPUPP_H_
#include "npupp.h"
#endif

char *makeNullTerm(char *, int );
NPError PlugGetValue(NPP , void *, void *);
void PlugVersion(int*, int*, int*, int* );
NPError PlugGetURLNotify(NPP, const char*, const char*, void* );
NPError PlugGetURL(NPP; const char*, const char* );
NPError PlugPostURLNotify(NPP, const char*, const char*, uint32,
                           const char*, NPBool, void* );
NPError PlugPostURL(NPP, const char*, const char*, uint32,
                     const char*, NPBool);
NPError PlugRequestRead(NPStream*, NPByteRange* );
NPError PlugNewStream(NPP, NPMIMEType, const char*, NPStream** );
int32 PlugWrite(NPP, NPStream*, int32, void* );
NPError PlugDestroyStream(NPP, NPStream*, NPREason);
void PlugStatus(NPP, const char* );
const char* PlugUserAgent(NPP);
void* PlugMemAlloc(uint32);
void PlugMemFree(void* );
uint32 PlugMemFlush(uint32);
void PlugReloadPlugins(NPBool);
JRIEnv* PlugGetJavaEnv(void);
jref PlugGetJavaPeer(NPP);
int setPlugextEntryPoints(NPNetScapeFuncs * ) ;

#endif
```

```

/* -*- Mode: C; tab-width: 4; -*- */
/*
 * npupp.h $Revision: 1.1 $
 * function call mechanics needed by platform specific glue code.
 */

#ifndef _NPUPP_H_
#define _NPUPP_H_

#ifndef GENERATINGCFM
#define GENERATINGCFM 0
#endif

#ifndef _NPAPI_H_
#include "npapi.h"
#endif

#include "jri.h"

/*****************
 * plug-in function table macros
 * for each function in and out of the plugin API we define
 *     typedef NPP_FooUPP
 *         #define NewNPP_FooProc
 *         #define CallNPP_FooProc
 * for mac, define the UPP magic for PPC/68K calling
 *****************/

```

```

/* NPP_Initialize */

#if GENERATINGCFM
typedef UniversalProcPtr NPP_InitializeUPP;

enum {
    uppNPP_InitializeProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(0))
        | RESULT_SIZE(SIZE_CODE(0))
};

#define NewNPP_InitializeProc(FUNC) \
    (NPP_InitializeUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_InitializeProcInfo, GetCurrentArchitecture())
#define CallNPP_InitializeProc(FUNC) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_InitializeProcInfo)

#else

typedef void (*NPP_InitializeUPP)(void);
#define NewNPP_InitializeProc(FUNC) \
    ((NPP_InitializeUPP) (FUNC))
#define CallNPP_InitializeProc(FUNC) \

```

```

        (* (FUNC)) ()

#endif

/* NPP_Shutdown */

#if GENERATINGCFM
typedef UniversalProcPtr NPP_ShutdownUPP;

enum {
    uppNPP_ShutdownProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(0))
        | RESULT_SIZE(SIZE_CODE(0))
};

#define NewNPP_ShutdownProc(FUNC)           \
    (NPP_ShutdownUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_ShutdownProcInfo, GetCurrentArchitecture())
#define CallNPP_ShutdownProc(FUNC)          \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_ShutdownProcInfo)

#else

typedef void (*NPP_ShutdownUPP)(void);
#define NewNPP_ShutdownProc(FUNC)           \
    ((NPP_ShutdownUPP) (FUNC))
#define CallNPP_ShutdownProc(FUNC)          \
    (* (FUNC))()

#endif

/* NPP_New */

#if GENERATINGCFM
typedef UniversalProcPtr NPP_NewUPP;

enum {
    uppNPP_NewProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPMIMEType)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(uint16)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(int16)))
        | STACK_ROUTINE_PARAMETER(5, SIZE_CODE(sizeof(char **)))
        | STACK_ROUTINE_PARAMETER(6, SIZE_CODE(sizeof(char **)))
        | STACK_ROUTINE_PARAMETER(7, SIZE_CODE(sizeof(NPSavedData *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPP_NewProc(FUNC)               \
    (NPP_NewUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_NewProcInfo, GetCurrentArchitecture())
#define CallNPP_NewProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6, ARG7) \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_NewProcInfo, \

```

```

(ARG1), (ARG2), (ARG3),
(ARG4), (ARG5), (ARG6), (ARG7))
#else

typedef NPError (*NPP_NewUPP)(NPMIMEType pluginType, NPP instance, uint16
mode, int16 argc, char* argv[], char* argc[], NPSavedData* saved);
#define NewNPP_NewProc(FUNC) \
    ((NPP_NewUPP) (FUNC))
#define CallNPP_NewProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6, ARG7) \
    (*(FUNC))((ARG1), (ARG2), (ARG3), (ARG4), (ARG5), (ARG6), (ARG7)) \
    \
#endif

/* NPP_Destroy */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_DestroyUPP;
enum {
    uppNPP_DestroyProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPSavedData **)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPP_DestroyProc(FUNC) \
    ((NPP_DestroyUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_DestroyProcInfo, GetCurrentArchitecture()))
#define CallNPP_DestroyProc(FUNC, ARG1, ARG2) \
    ((NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_DestroyProcInfo, (ARG1), (ARG2)))
#else

typedef NPError (*NPP_DestroyUPP)(NPP instance, NPSavedData** save);
#define NewNPP_DestroyProc(FUNC) \
    ((NPP_DestroyUPP) (FUNC))
#define CallNPP_DestroyProc(FUNC, ARG1, ARG2) \
    (*(FUNC))((ARG1), (ARG2))

#endif

/* NPP_SetWindow */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_SetWindowUPP;
enum {
    uppNPP_SetWindowProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPWindow *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPP_SetWindowProc(FUNC) \
    ((NPP_SetWindowUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_SetWindowProcInfo, GetCurrentArchitecture()))
#define CallNPP_SetWindowProc(FUNC, ARG1, ARG2) \
    \

```

```

        (NPError)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPP_SetWindowProcInfo, (ARG1), (ARG2))

#else

typedef NPError (*NPP_SetWindowUPP)(NPP instance, NPWindow* window);
#define NewNPP_SetWindowProc(FUNC) \
    ((NPP_SetWindowUPP) (FUNC))
#define CallNPP_SetWindowProc(FUNC, ARG1, ARG2) \
    (*(FUNC))((ARG1), (ARG2))

#endif

/* NPP_NewStream */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_NewStreamUPP;
enum {
    uppNPP_NewStreamProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPMIMEType)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(NPStream *)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(NPBool)))
        | STACK_ROUTINE_PARAMETER(5, SIZE_CODE(sizeof(uint16 *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPP_NewStreamProc(FUNC) \
    (NPP_NewStreamUPP) NewRoutineDescriptor((ProcPtr)(FUNC),
uppNPP_NewStreamProcInfo, GetCurrentArchitecture())
#define CallNPP_NewStreamProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5) \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPP_NewStreamProcInfo, (ARG1), (ARG2), (ARG3), (ARG4), (ARG5))
#else

typedef NPError (*NPP_NewStreamUPP)(NPP instance, NPMIMEType type, NPStream*
stream, NPBool seekable, uint16* stype);
#define NewNPP_NewStreamProc(FUNC) \
    ((NPP_NewStreamUPP) (FUNC))
#define CallNPP_NewStreamProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5) \
    (*(FUNC))((ARG1), (ARG2), (ARG3), (ARG4), (ARG5))
#endif

/* NPP_DestroyStream */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_DestroyStreamUPP;
enum {
    uppNPP_DestroyStreamProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream *)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(NPReason)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};


```

```

#define NewNPP_DestroyStreamProc(FUNC)           \
    (NPP_DestroyStreamUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_DestroyStreamProcInfo, GetCurrentArchitecture())
#define CallNPP_DestroyStreamProc(FUNC, NPParg, NPStreamPtr, NPReasonArg)
    \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_DestroyStreamProcInfo, (NPParg), (NPStreamPtr), (NPReasonArg))

#else

typedef NPError (*NPP_DestroyStreamUPP)(NPP instance, NPStream* stream,
NPReason reason);
#define NewNPP_DestroyStreamProc(FUNC)           \
    ((NPP_DestroyStreamUPP) (FUNC))
#define CallNPP_DestroyStreamProc(FUNC, NPParg, NPStreamPtr, NPReasonArg)
    \
    (*(FUNC)) ((NPParg), (NPStreamPtr), (NPReasonArg))

#endif

/* NPP_WriteReady */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_WriteReadyUPP;
enum {
    uppNPP_WriteReadyProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(int32)))
};

#define NewNPP_WriteReadyProc(FUNC)           \
    (NPP_WriteReadyUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_WriteReadyProcInfo, GetCurrentArchitecture())
#define CallNPP_WriteReadyProc(FUNC, NPParg, NPStreamPtr)           \
    (int32)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_WriteReadyProcInfo, (NPParg), (NPStreamPtr))

#else

typedef int32 (*NPP_WriteReadyUPP)(NPP instance, NPStream* stream);
#define NewNPP_WriteReadyProc(FUNC)           \
    ((NPP_WriteReadyUPP) (FUNC))
#define CallNPP_WriteReadyProc(FUNC, NPParg, NPStreamPtr)           \
    (*(FUNC))((NPParg), (NPStreamPtr))

#endif

/* NPP_Write */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_WriteUPP;
enum {
    uppNPP_WriteProcInfo = kThinkCStackBased

```

```

    | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
    | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream *)))
    | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(int32)))
    | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(int32)))
    | STACK_ROUTINE_PARAMETER(5, SIZE_CODE(sizeof(void*)))
    | RESULT_SIZE(SIZE_CODE(sizeof(int32)))
};

#define NewNPP_WriteProc(FUNC)           \
    ((NPP_WriteUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_WriteProcInfo, GetCurrentArchitecture()))
#define CallNPP_WriteProc(FUNC, NPParg, NPStreamPtr, offsetArg, lenArg, \
bufferPtr)           \
    ((int32)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_WriteProcInfo, (NPParg), (NPStreamPtr), (offsetArg), (lenArg), \
(bufferPtr)))

#else

typedef int32 (*NPP_WriteUPP)(NPP instance, NPStream* stream, int32 offset, \
int32 len, void* buffer);
#define NewNPP_WriteProc(FUNC)           \
    ((NPP_WriteUPP) (FUNC))
#define CallNPP_WriteProc(FUNC, NPParg, NPStreamPtr, offsetArg, lenArg, \
bufferPtr)           \
    ((* (FUNC)) ((NPParg), (NPStreamPtr), (offsetArg), (lenArg), \
(bufferPtr)))

#endif

/* NPP_StreamAsFile */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_StreamAsFileUPP;
enum {
    uppNPP_StreamAsFileProcInfo = kThinkCStackBased
    | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
    | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream *)))
    | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char *)))
    | RESULT_SIZE(SIZE_CODE(0))
};
#define NewNPP_StreamAsFileProc(FUNC)           \
    ((NPP_StreamAsFileUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_StreamAsFileProcInfo, GetCurrentArchitecture()))
#define CallNPP_StreamAsFileProc(FUNC, ARG1, ARG2, ARG3)           \
    ((void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_StreamAsFileProcInfo, (ARG1), (ARG2), (ARG3)))

#else

typedef void (*NPP_StreamAsFileUPP)(NPP instance, NPStream* stream, const char* \
fname);
#define NewNPP_StreamAsFileProc(FUNC)           \
    ((NPP_StreamAsFileUPP) (FUNC))
#define CallNPP_StreamAsFileProc(FUNC, ARG1, ARG2, ARG3)           \
    ((* (FUNC)) ((ARG1), (ARG2), (ARG3)))


```

```

#endif

/* NPP_Print */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_PrintUPP;
enum {
    uppNPP_PrintProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPPrint *)))
        | RESULT_SIZE(SIZE_CODE(0))
};

#define NewNPP_PrintProc FUNC) \
    (NPP_PrintUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_PrintProcInfo, GetCurrentArchitecture())
#define CallNPP_PrintProc FUNC, NPParg, voidPtr) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_PrintProcInfo, (NPParg), (voidPtr))

#else

typedef void (*NPP_PrintUPP) (NPP instance, NPPrint* platformPrint);
#define NewNPP_PrintProc FUNC) \
    ((NPP_PrintUPP) (FUNC))
#define CallNPP_PrintProc FUNC, NPParg, NPPrintArg) \
    (* (FUNC)) ((NPParg), (NPPrintArg))

#endif

/* NPP_HandleEvent */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_HandleEventUPP;
enum {
    uppNPP_HandleEventProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(void *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(int16)))
};

#define NewNPP_HandleEventProc FUNC) \
    (NPP_HandleEventUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_HandleEventProcInfo, GetCurrentArchitecture())
#define CallNPP_HandleEventProc FUNC, NPParg, voidPtr) \
    (int16)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_HandleEventProcInfo, (NPParg), (voidPtr))

#else

typedef int16 (*NPP_HandleEventUPP) (NPP instance, void* event);
#define NewNPP_HandleEventProc FUNC) \
    ((NPP_HandleEventUPP) (FUNC))
#define CallNPP_HandleEventProc FUNC, NPParg, voidPtr) \
    (* (FUNC)) ((NPParg), (voidPtr))


```

```

#endif

/* NPP_URLNotify */

#if GENERATINGCFM

typedef UniversalProcPtr NPP_URLNotifyUPP;
enum {
    uppNPP_URLNotifyProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(NPReason)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(void*)))
        | RESULT_SIZE(SIZE_CODE(sizeof(0)))
};

#define NewNPP_URLNotifyProc FUNC \
    (NPP_URLNotifyUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_URLNotifyProcInfo, GetCurrentArchitecture())
#define CallNPP_URLNotifyProc FUNC, ARG1, ARG2, ARG3, ARG4 \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPP_URLNotifyProcInfo, (ARG1), (ARG2), (ARG3), (ARG4))

#else

typedef void (*NPP_URLNotifyUPP)(NPP instance, const char* url, NPReason reason,
void* notifyData);
#define NewNPP_URLNotifyProc FUNC \
    ((NPP_URLNotifyUPP) (FUNC))
#define CallNPP_URLNotifyProc FUNC, ARG1, ARG2, ARG3, ARG4 \
    (* (FUNC))((ARG1), (ARG2), (ARG3), (ARG4))

#endif

```

```

/*
 * Netscape entry points
 */

#ifndef XP_UNIX

/* NPN_GetValue */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_GetValueUPP;
enum {
    uppNPN_GetValueProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPNVariable)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(void *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_GetValueProc FUNC \

```

```

        (NPN_GetValueUPP) NewRoutineDescriptor((ProcPtr)(FUNC),
uppNPN_GetValueProcInfo, GetCurrentArchitecture())
#define CallNPN_GetURNotifyLProc(FUNC, ARG1, ARG2, ARG3) \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPN_GetValueProcInfo, (ARG1), (ARG2), (ARG3))
#else

typedef NPError (*NPN_GetValueUPP)(NPP instance, NPNVariable variable, void
*ret_value);
#define NewNPN_GetValueProc(FUNC) \
    ((NPN_GetValueUPP) (FUNC))
#define CallNPN_GetValueProc(FUNC, ARG1, ARG2, ARG3) \
    (*(FUNC))((ARG1), (ARG2), (ARG3))
#endif

#endif /* XP_UNIX */

/* NPN_GetUrlNotify */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_GetURLNotifyUPP;
enum {
    uppNPN_GetURLNotifyProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(void*)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_GetURLNotifyProc(FUNC) \
    (NPN_GetURLNotifyUPP) NewRoutineDescriptor((ProcPtr)(FUNC),
uppNPN_GetURLNotifyProcInfo, GetCurrentArchitecture())
#define CallNPN_GetURNotifyLProc(FUNC, ARG1, ARG2, ARG3, ARG4) \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPN_GetURLNotifyProcInfo, (ARG1), (ARG2), (ARG3), (ARG4))
#else

typedef NPError (*NPN_GetURLNotifyUPP)(NPP instance, const char* url, const
char* window, void* notifyData);
#define NewNPN_GetURLNotifyProc(FUNC) \
    ((NPN_GetURLNotifyUPP) (FUNC))
#define CallNPN_GetURLNotifyProc(FUNC, ARG1, ARG2, ARG3, ARG4) \
    (*(FUNC))((ARG1), (ARG2), (ARG3), (ARG4))
#endif

/* NPN_PostUrlNotify */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_PostURLNotifyUPP;
enum {
    uppNPN_PostURLNotifyProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))

```

```

    | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(const char*)))
    | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char*)))
    | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(uint32)))
    | STACK_ROUTINE_PARAMETER(5, SIZE_CODE(sizeof(const char*)))
    | STACK_ROUTINE_PARAMETER(6, SIZE_CODE(sizeof(NPBool)))
    | STACK_ROUTINE_PARAMETER(7, SIZE_CODE(sizeof(void*)))
    | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_PostURLNotifyProc(FUNC)           \
    ((NPN_PostURLNotifyUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_PostURLNotifyProcInfo, GetCurrentArchitecture()))
#define CallNPN_PostURLNotifyProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6, \
ARG7) \
    ((NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_PostURLNotifyProcInfo, (ARG1), (ARG2), (ARG3), (ARG4), (ARG5), (ARG6), \
(ARG7)))
#else

typedef NPError (*NPN_PostURLNotifyUPP)(NPP instance, const char* url, const
char* window, uint32 len, const char* buf, NPBool file, void* notifyData);
#define NewNPN_PostURLNotifyProc(FUNC)           \
    ((NPN_PostURLNotifyUPP) (FUNC))
#define CallNPN_PostURLNotifyProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6,
ARG7) \
    ((*(FUNC))((ARG1), (ARG2), (ARG3), (ARG4), (ARG5), (ARG6), (ARG7)))
#endif

/* NPN_GetUrl */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_GetURLUPP;
enum {
    uppNPN_GetURLProcInfo = kThinkCStackBased
    | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
    | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(const char*)))
    | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char*)))
    | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};
#define NewNPN_GetURLProc(FUNC)           \
    ((NPN_GetURLUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_GetURLProcInfo, GetCurrentArchitecture()))
#define CallNPN_GetURLProc(FUNC, ARG1, ARG2, ARG3) \
    ((NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_GetURLProcInfo, (ARG1), (ARG2), (ARG3)))
#else

typedef NPError (*NPN_GetURLUPP)(NPP instance, const char* url, const char*
window);
#define NewNPN_GetURLProc(FUNC)           \
    ((NPN_GetURLUPP) (FUNC))
#define CallNPN_GetURLProc(FUNC, ARG1, ARG2, ARG3) \
    ((*(FUNC))((ARG1), (ARG2), (ARG3)))
#endif

```

```

/* NPN_PostUrl */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_PostURLUPP;
enum {
    uppNPN_PostURLProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(uint32)))
        | STACK_ROUTINE_PARAMETER(5, SIZE_CODE(sizeof(const char*)))
        | STACK_ROUTINE_PARAMETER(6, SIZE_CODE(sizeof(NPBool)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_PostURLProc(FUNC) \
    ((NPN_PostURLUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_PostURLProcInfo, GetCurrentArchitecture()))
#define CallNPN_PostURLProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6) \
    ((NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_PostURLProcInfo, (ARG1), (ARG2), (ARG3), (ARG4), (ARG5), (ARG6)))
#else

typedef NPError (*NPN_PostURLUPP)(NPP instance, const char* url, const char*
window, uint32 len, const char* buf, NPBool file);
#define NewNPN_PostURLProc(FUNC) \
    ((NPN_PostURLUPP) (FUNC))
#define CallNPN_PostURLProc(FUNC, ARG1, ARG2, ARG3, ARG4, ARG5, ARG6) \
    (*(FUNC))((ARG1), (ARG2), (ARG3), (ARG4), (ARG5), (ARG6))
#endif

/* NPN_RequestRead */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_RequestReadUPP;
enum {
    uppNPN_RequestReadProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPStream *)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPByteRange *)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};
#define NewNPN_RequestReadProc(FUNC) \
    ((NPN_RequestReadUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_RequestReadProcInfo, GetCurrentArchitecture()))
#define CallNPN_RequestReadProc(FUNC, stream, range) \
    ((NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_RequestReadProcInfo, (stream), (range)))

#else

typedef NPError (*NPN_RequestReadUPP)(NPStream* stream, NPByteRange*
rangeList);
#define NewNPN_RequestReadProc(FUNC) \
    ((NPN_RequestReadUPP) (FUNC))
#define CallNPN_RequestReadProc(FUNC, stream, range) \

```

```

        (* (FUNC)) ((stream), (range))

#endif

/* NPN_NewStream */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_NewStreamUPP;
enum {
    uppNPN_NewStreamProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPMIMEType)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(const char *)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(NPStream **)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_NewStreamProc(FUNC) \
    (NPN_NewStreamUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_NewStreamProcInfo, GetCurrentArchitecture())
#define CallNPN_NewStreamProc(FUNC, npp, type, window, stream) \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_NewStreamProcInfo, (npp), (type), (window), (stream))

#else

typedef NPError (*NPN_NewStreamUPP)(NPP instance, NPMIMEType type, const char*
window, NPStream** stream);
#define NewNPN_NewStreamProc(FUNC) \
    ((NPN_NewStreamUPP) (FUNC))
#define CallNPN_NewStreamProc(FUNC, npp, type, window, stream) \
    ((*FUNC))((npp), (type), (window), (stream))

#endif

/* NPN_Write */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_WriteUPP;
enum {
    uppNPN_WriteProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream **)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(int32)))
        | STACK_ROUTINE_PARAMETER(4, SIZE_CODE(sizeof(void*)))
        | RESULT_SIZE(SIZE_CODE(sizeof(int32)))
};

#define NewNPN_WriteProc(FUNC) \
    (NPN_WriteUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_WriteProcInfo, GetCurrentArchitecture())
#define CallNPN_WriteProc(FUNC, npp, stream, len, buffer) \
    (int32)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_WriteProcInfo, (npp), (stream), (len), (buffer))

```

```

#else

typedef int32 (*NPN_WriteUPP) (NPP instance, NPStream* stream, int32 len, void* buffer);
#define NewNPN_WriteProc(FUNC)           \
    ((NPN_WriteUPP) (FUNC))
#define CallNPN_WriteProc(FUNC, npp, stream, len, buffer)           \
    (*(FUNC))((npp), (stream), (len), (buffer))

#endif

/* NPN_DestroyStream */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_DestroyStreamUPP;
enum {
    uppNPN_DestroyStreamProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPStream *)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(NPReason)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPN_DestroyStreamProc(FUNC)           \
    (NPN_DestroyStreamUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_DestroyStreamProcInfo, GetCurrentArchitecture())
#define CallNPN_DestroyStreamProc(FUNC, npp, stream, reason)           \
    (NPError)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_DestroyStreamProcInfo, (npp), (stream), (reason))

#else

typedef NPError (*NPN_DestroyStreamUPP) (NPP instance, NPStream* stream, NPReason reason);
#define NewNPN_DestroyStreamProc(FUNC)           \
    ((NPN_DestroyStreamUPP) (FUNC))
#define CallNPN_DestroyStreamProc(FUNC, npp, stream, reason)           \
    (*(FUNC))((npp), (stream), (reason))

#endif

/* NPN_Status */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_StatusUPP;
enum {
    uppNPN_StatusProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(char *)))
};

#define NewNPN_StatusProc(FUNC)           \
    (NPN_StatusUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_StatusProcInfo, GetCurrentArchitecture())

```

```

#define CallNPN_StatusProc(FUNC, npp, msg) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_StatusProcInfo, (npp), (msg))

#else

typedef void (*NPN_StatusUPP)(NPP instance, const char* message);
#define NewNPN_StatusProc(FUNC) \
    ((NPN_StatusUPP) (FUNC))
#define CallNPN_StatusProc(FUNC, npp, msg) \
    (*(FUNC))((npp), (msg))

#endif

/* NPN_UserIdent */
#if GENERATINGCFM

typedef UniversalProcPtr NPN_UserIdentUPP;
enum {
    uppNPN_UserIdentProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | RESULT_SIZE(SIZE_CODE(sizeof(const char *)))
};

#define NewNPN_UserIdentProc(FUNC) \
    ((NPN_UserIdentUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_UserIdentProcInfo, GetCurrentArchitecture()))
#define CallNPN_UserIdentProc(FUNC, ARG1) \
    ((const char*)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_UserIdentProcInfo, (ARG1)))

#else

typedef const char* (*NPN_UserIdentUPP)(NPP instance);
#define NewNPN_UserIdentProc(FUNC) \
    ((NPN_UserIdentUPP) (FUNC))
#define CallNPN_UserIdentProc(FUNC, ARG1) \
    (*(FUNC))((ARG1))

#endif

/* NPN_MemAlloc */
#if GENERATINGCFM

typedef UniversalProcPtr NPN_MemAllocUPP;
enum {
    uppNPN_MemAllocProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(uint32)))
        | RESULT_SIZE(SIZE_CODE(sizeof(void *)))
};

#define NewNPN_MemAllocProc(FUNC) \
    ((NPN_MemAllocUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_MemAllocProcInfo, GetCurrentArchitecture()))
#define CallNPN_MemAllocProc(FUNC, ARG1) \

```

```

        (void*)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPN_MemAllocProcInfo, (ARG1))

#else

typedef void* (*NPN_MemAllocUPP)(uint32 size);
#define NewNPN_MemAllocProc(FUNC)           \
    ((NPN_MemAllocUPP) (FUNC))
#define CallNPN_MemAllocProc(FUNC, ARG1)    \
    (*(FUNC)) ((ARG1))

#endif

/* NPN__MemFree */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_MemFreeUPP;
enum {
    uppNPN_MemFreeProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(void *)))
};

#define NewNPN_MemFreeProc(FUNC)           \
    ((NPN_MemFreeUPP) NewRoutineDescriptor((ProcPtr)(FUNC),
uppNPN_MemFreeProcInfo, GetCurrentArchitecture()))
#define CallNPN_MemFreeProc(FUNC, ARG1)    \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPN_MemFreeProcInfo, (ARG1))

#else

typedef void (*NPN_MemFreeUPP)(void* ptr);
#define NewNPN_MemFreeProc(FUNC)           \
    ((NPN_MemFreeUPP) (FUNC))
#define CallNPN_MemFreeProc(FUNC, ARG1)    \
    (*(FUNC)) ((ARG1))

#endif

/* NPN_MemFlush */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_MemFlushUPP;
enum {
    uppNPN_MemFlushProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(uint32)))
        | RESULT_SIZE(SIZE_CODE(sizeof(uint32)))
};

#define NewNPN_MemFlushProc(FUNC)           \
    ((NPN_MemFlushUPP) NewRoutineDescriptor((ProcPtr)(FUNC),
uppNPN_MemFlushProcInfo, GetCurrentArchitecture()))
#define CallNPN_MemFlushProc(FUNC, ARG1)    \

```

```

        (uint32)CallUniversalProc((UniversalProcPtr)(FUNC),
uppNPN_MemFlushProcInfo, (ARG1))

#else

typedef uint32 (*NPN_MemFlushUPP)(uint32 size);
#define NewNPN_MemFlushProc(FUNC) \
    ((NPN_MemFlushUPP)(FUNC))
#define CallNPN_MemFlushProc(FUNC, ARG1) \
    (* (FUNC))((ARG1))

#endif

/* NPN_ReloadPlugins */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_ReloadPluginsUPP;
enum {
    uppNPN_ReloadPluginsProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPBool)))
        | RESULT_SIZE(SIZE_CODE(0))
};

#define NewNPN_ReloadPluginsProc(FUNC) \
    ((NPN_ReloadPluginsUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_ReloadPluginsProcInfo, GetCurrentArchitecture()))
#define CallNPN_ReloadPluginsProc(FUNC, ARG1) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_ReloadPluginsProcInfo, (ARG1))

#else

typedef void (*NPN_ReloadPluginsUPP)(NPBool reloadPages);
#define NewNPN_ReloadPluginsProc(FUNC) \
    ((NPN_ReloadPluginsUPP)(FUNC))
#define CallNPN_ReloadPluginsProc(FUNC, ARG1) \
    (* (FUNC))((ARG1))

#endif

/* NPN_GetJavaEnv */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_GetJavaEnvUPP;
enum {
    uppNPN_GetJavaEnvProcInfo = kThinkCStackBased
        | RESULT_SIZE(SIZE_CODE(sizeof(JRIEnv*)))
};

#define NewNPN_GetJavaEnvProc(FUNC) \
    ((NPN_GetJavaEnvUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_GetJavaEnvProcInfo, GetCurrentArchitecture()))

```

```

#define CallNPN_GetJavaEnvProc(FUNC) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_GetJavaEnvProcInfo)

#else

typedef JRIEnv* (*NPN_GetJavaEnvUPP)(void);
#define NewNPN_GetJavaEnvProc(FUNC) \
    ((NPN_GetJavaEnvUPP)(FUNC))
#define CallNPN_GetJavaEnvProc(FUNC) \
    (*(FUNC))()

#endif

/* NPN_GetJavaPeer */

#if GENERATINGCFM

typedef UniversalProcPtr NPN_GetJavaPeerUPP;
enum {
    uppNPN_GetJavaPeerProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPP)))
        | RESULT_SIZE(SIZE_CODE(sizeof(jref)))
};

#define NewNPN_GetJavaPeerProc(FUNC) \
    ((NPN_GetJavaPeerUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPN_GetJavaPeerProcInfo, GetCurrentArchitecture()))
#define CallNPN_GetJavaPeerProc(FUNC, ARG1) \
    (void)CallUniversalProc((UniversalProcPtr)(FUNC), \
uppNPN_GetJavaPeerProcInfo, (ARG1))

#else

typedef jref (*NPN_GetJavaPeerUPP)(NPP instance);
#define NewNPN_GetJavaPeerProc(FUNC) \
    ((NPN_GetJavaPeerUPP)(FUNC))
#define CallNPN_GetJavaPeerProc(FUNC, ARG1) \
    (*(FUNC))((ARG1))

#endif

/********************* \
*****
 * The actual plugin function table definitions
*****
/*****************/

```

```

typedef struct _NPPluginFuncs {
    uint16 size;
    uint16 version;
    NPP_NewUPP newp;

```

```

NPP_DestroyUPP destroy;
NPP_SetWindowUPP setwindow;
NPP_NewStreamUPP newstream;
NPP_DestroyStreamUPP destroystream;
NPP_StreamAsFileUPP asfile;
NPP_WriteReadyUPP writeready;
NPP_WriteUPP write;
NPP_PrintUPP print;
NPP_HandleEventUPP event;
NPP_URLNotifyUPP urlnotify;
JRIGlobalRef javaClass;
} NPPluginFuncs;

typedef struct _NPNetscapeFuncs {
    uint16 size;
    uint16 version;
    NPN_GetURLUPP geturl;
    NPN_PostURLUPP posturl;
    NPN_RequestReadUPP requestread;
    NPN_NewStreamUPP newstream;
    NPN_WriteUPP write;
    NPN_DestroyStreamUPP destroystream;
    NPN_StatusUPP status;
    NPN_UserAgentUPP uagent;
    NPN_MemAllocUPP memalloc;
    NPN_MemFreeUPP memfree;
    NPN_MemFlushUPP memflush;
    NPN_ReloadPluginsUPP reloadplugins;
    NPN_GetJavaEnvUPP getJavaEnv;
    NPN_GetJavaPeerUPP getJavaPeer;
    NPN_GetURLNotifyUPP geturlnotify;
    NPN_PostURLNotifyUPP posturlnotify;
#endif XP_UNIX
    NPN_GetValueUPP getvalue;
#endif /* XP_UNIX */
} NPNetScapeFuncs;

```

```

#ifndef XP_MAC
*****
***** *
* Mac platform-specific plugin glue stuff
*****
**** */

/*
 * Main entry point of the plugin.
 * This routine will be called when the plugin is loaded. The function
 * tables are passed in and the plugin fills in the NPPluginFuncs table
 * and NPPShutdownUPP for Netscape's use.
*/
#endif GENERATINGCFM

typedef UniversalProcPtr NPP_MainEntryUPP;

```

```

enum {
    uppNPP_MainEntryProcInfo = kThinkCStackBased
        | STACK_ROUTINE_PARAMETER(1, SIZE_CODE(sizeof(NPNetscapeFuncs*)))
        | STACK_ROUTINE_PARAMETER(2, SIZE_CODE(sizeof(NPPluginFuncs*)))
        | STACK_ROUTINE_PARAMETER(3, SIZE_CODE(sizeof(NPP_ShutdownUPP*)))
        | RESULT_SIZE(SIZE_CODE(sizeof(NPError)))
};

#define NewNPP_MainEntryProc(FUNC) \
    (NPP_MainEntryUPP) NewRoutineDescriptor((ProcPtr)(FUNC), \
uppNPP_MainEntryProcInfo, GetCurrentArchitecture())
#define CallNPP_MainEntryProc(FUNC, netscapeFunc, pluginFunc, shutdownUPP)
    \
    CallUniversalProc((UniversalProcPtr)(FUNC), \
(ProcInfoType)uppNPP_MainEntryProcInfo, (netscapeFunc), (pluginFunc), \
(shutdownUPP))

#else

typedef NPError (*NPP_MainEntryUPP)(NPNetScapeFuncs*, NPPluginFuncs*, \
NPP_ShutdownUPP*);
#define NewNPP_MainEntryProc(FUNC) \
    ((NPP_MainEntryUPP)(FUNC))
#define CallNPP_MainEntryProc(FUNC, netscapeFunc, pluginFunc, shutdownUPP)
    \
    (*(FUNC))((netscapeFunc), (pluginFunc), (shutdownUPP))

#endif
#endif /* MAC */

#ifndef _WINDOWS

#ifndef __cplusplus
extern "C" {
#endif

/* plugin meta member functions */

NPError WINAPI NP_GetEntryPoints(NPPluginFuncs* pFuncs);

NPError WINAPI NP_Initialize(NPNetScapeFuncs* pFuncs);

NPError WINAPI NP_Shutdown();

#ifndef __cplusplus
}
#endif

#endif /* _WINDOWS */

#ifndef XP_UNIX

#ifndef __cplusplus
extern "C" {
#endif

/* plugin meta member functions */


```

```
char* NP_GetMIMEDescription(void);
NPError    NP_Initialize(NPNetscapeFuncs*, NPPPluginFuncs*);
NPError    NP_Shutdown(void);

#ifndef __cplusplus
}
#endif

#endif /* XP_UNIX */

#endif /* _NPUPP_H_ */
```

```
#include <stdio.h>
//#if defined (_WIN32)^M
//#else
//#include <dlopen.h>
//#endif
#include "npupp.h"
#include <tcl.h>

extern Tcl_HashTable *dlopen_hashtablePtr;

initPlugin(void *handle) {
    NP_NetscapeFuncs netscapeFuncs;
    char f[8];
    NP_PluginFuncs pluginFuncs;
    int err;

    pluginFuncs.size = sizeof(NP_PluginFuncs);
    pluginFuncs.version = 9;
    pluginFuncs.newp = 0;

    printf("Sizeof Plugin: %d netscapeFuncs: %d\n", sizeof(pluginFuncs),
    sizeof(netscapeFuncs));
    netscapeFuncs.size = sizeof(NP_NetscapeFuncs);
    netscapeFuncs.version = 9;
    netscapeFuncs.geturl = 0;

    printf("set sizes\n"); fflush(stdout);

    printf("start init\n"); fflush(stdout);
    err = NP_Initialize(&netscapeFuncs, &pluginFuncs);
    printf("doneinit: %d\n", err); fflush(stdout);
//    NP_GetEntryPoints(&pluginFuncs);

    printf("\nHANDLE: %xx size: %d version: %d newp: %d\n", handle,
    pluginFuncs.size, pluginFuncs.version, pluginFuncs.newp);
    printf("\nHANDLE: %xx size: %d version: %d geturl: %d\n", handle,
    netscapeFuncs.size, netscapeFuncs.version, netscapeFuncs.geturl);
}
```

```

/*
 *  plugext1.0 is a compiled version of plugext for Tcl.
 *  -- Clif Flynt <clif@cflynt.com> Jan 3, 1999
 *  --
 *  -- Modified from get.c by
 *  -- Jean-Claude Wippler <jcw@equi4.com>, September 17, 1998.
 */

#ifndef _WIN32
#include <windows.h>
#endif
#include <stdlib.h>
#include <stdio.h>
#include <ctype.h>
#if defined (_WIN32)^M
#else
#include <dlfcn.h>
#endif
#include "npupp.h"
#include "NPN_wrapper.h"
#include "plugextInt.h"

extern Tcl_HashTable *dlopen_hashtablePtr;

Tcl_HashTable *plugext_hashtablePtr;

/* If plugextDebugPrint != 0, then debugprt will print debugging info */
/* This value is set with the default subcommand function debug */

int plugextDebugPrint = 0;

/* This is used to create unique names for un-named plugins */

static int plugextID = 0;

#if defined (_WIN32)
#define WINEXPORT(t) __declspec(dllexport) t
#elif defined (_WIN)
#define WINEXPORT(t) t __export
#else
#define WINEXPORT(t) t
#endif

#if defined (__MWERKS__)
#pragma export on
#endif

FILE *logFl = NULL;

WINEXPORT(int) Plugext_Init(Tcl_Interp* interp)
{
    logFl = fopen("LOGFL", "w");

    fprintf(logFl, "Hit Plugext_Init\n");
    fflush(stdout);
    Tcl_CreateObjCommand(interp, "plugext", (Tcl_ObjCmdProc *) plugext_Cmd, 0,
0);
    Tcl_PkgProvide(interp, "plugext", "1.0");
}

```

```

    plugext_hashtablePtr = initHashTable();

fprintf(logFl, "Leaving Plugext_Init\n"); fflush(stdout);
    return TCL_OK;
}

WINEXPORT(int) Plugext_SafeInit(Tcl_Interp* interp)
{
    return Plugext_Init(interp);
}

/* ..... */

/*
* Define the sub commands
*
* These strings define the subcommands that the plugext command
* supports.
*
* To add a new subcommand, add the new subcommand string,
* #define and entry in cmdDefinition
*
* Note: Order is important.
*
* These are the subcommands that will be recognized
*
*/
static char *subcommands[] = {
    "create", "debug", "bogus", NULL};

/*
* These #defines define the positions of the subcommands.
* You can use enums if you are certain your compiler will provide the
* same numbers as this.
*/
#define M_create 0
#define M_debug 1
#define M_bogus 2

/*
* The cmdDefinition structure describes the minimum and maximum number
* of expected arguments for the subcommand (including cmd and subcommand
* names), and a usage message to return if the argument
* count is outside the expected range.
*/
static cmdDefinition definitions[] = {
    {"create ?name? -path path", 3 , 7},
    {"debug 0/1", 3 , 3},
    {"bogus bogusval", 3, 3}
};

```

```

/* ----- C++ Comment
// These are the segments that need to be declared in the "C" namespace
// These function names and data will be accessed by programs in the
//   Tcl "C" language library.
*/
/*
*-----*
*-----*
* plugext_Cmd --
*
*     plugext_Cmd is invoked to process the "plugext" Tcl command.
*     It will parse a subcommand, and perform the requested action.
*
* Results:
*     A standard Tcl result.
*
* Side effects:
*
*-----*
*/
// WINEXPORT(int)
int plugext_Cmd(ClientData plugext,
                 Tcl_Interp *interp,
                 int objc,
                 Tcl_Obj *objv[]) {

    /* ClientData plugext;           /* Not used. */
    /* Tcl_Interp *interp;          /* Current interpreter. */
    /* int objc;                   /* Number of arguments. */
    /* Tcl_Obj *CONST objv[];       /* Argument objects. */

    int cmdnum;
    int result;
    Tcl_Obj *returnValue;
    CmdReturn *returnStruct;

    /*
     * Initialize the return value
     */
    returnValue = NULL;
    returnStruct = NULL;

    /*
     * Check that we have at least a subcommand,
     * else return an Error and the usage message
     */
    if (objc < 2) {
        Tcl_WrongNumArgs(interp, 1, objv,
                         "subcommand ?plugextID? ?fieldName? ?fieldValue?");
        return TCL_ERROR;
    }

```

```

/*
 * Find this plugext subcommand in the list of subcommands.
 * Tcl_GetIndexFromObj returns the offset of the recognized string,
 * which is used to index into the command definitions table.
 */

result = Tcl_GetIndexFromObj(interp, objv[1], subcommands,
                            "subcommand", TCL_EXACT, &cmdnum);

/*
 * If the result is not TCL_OK, then the error message is already
 * in the Tcl Interpreter, this code can immediately return.
 */

if (result != TCL_OK) {
    return TCL_ERROR;
}

/*
 * Check that the argument count matches what's expected for this
 * Subcommand.
 */

if ((objc < definitions[cmdnum].minArgCnt) ||
    (objc > definitions[cmdnum].maxArgCnt) ) {
    Tcl_WrongNumArgs(interp, 1, objv, definitions[cmdnum].usage);
    return TCL_ERROR;
}

result = TCL_OK;

/*
 * The subcommand is recognized, and has a valid number of arguments
 * Process the command.
 */

switch (cmdnum) {
    case M_debug: {
        char *tmp;
        tmp = TclGetStringFromObj(objv[2], NULL);
        if (TCL_OK != TclGetInt(interp, tmp, &plugextDebugPrint)) {
            return (TCL_ERROR);
        }
        break;
    }
    case M_create: {
        returnStruct =
            plugext_createCmd((ClientData) NULL, interp, objc, objv);
        break;
    }
    default: {
        char error[80];
        sprintf(error, "Bad sub-command %s.  Has no entry in switch",
                TclGetStringFromObj(objv[1], NULL));
        returnValue = Tcl_NewStringObj(error, -1);
    }
}

```

```

        result = TCL_ERROR;
    }
}

/*
 * Extract an object to return from returnStruct.
 * returnStruct will be NULL if the processing is done in this
 * function and no other function is called.
 */
if (returnStruct != NULL) {
    returnValue = returnStruct->object;
    result = returnStruct->status;
    Tcl_Free ((char *)returnStruct);
}

/*
 * Set the return value and return the status
 */
if (returnValue != NULL) {
    Tcl_SetObjResult(interp, returnValue);
}

MyPrint("leaving plugext Cmd\n"); fflush(stdout);

return result;
}

/* ..... */

/*
-----*
* int plugext_loadInit (Tcl_Interp *interp, char *hashName) --
*     Initializes the pluginData structure -
*     assigns values to NP NetscapeFuncs and NPPluginFuncs
*
* Arguments:
*     interp   The tcl interpreter state pointer
*     hashName      The key for the hashed PluginData object
*
* Results:
*     Function Pointers are up to date.
*
* Side Effects:
*
-----*/
int plugext_loadInit (Tcl_Interp *interp, char *hashName) {
    int err;
    NP NetscapeFuncs *netscapeFuncs;
    NPPluginFuncs *pluginFuncs;
    PluginData *pluginData;

    NPError (*init)();           /* The initialize function */
    NPError (*getent)();         /* The NP_GetEntryPoints function */

    pluginData = (PluginData *) getHashData(interp, hashName,
plugext_hashtablePtr);

```

```

if (pluginData == NULL) {
    return TCL_ERROR;
}

// Initialize these.  We'll be using them later.
init = getent = NULL;
err = 0;

pluginData->childList = Tcl_NewListObj(0, NULL);

netscapeFuncs = &(pluginData->netscapeFuncs);
pluginFuncs = &(pluginData->pluginFuncs);

pluginFuncs->size = sizeof(NPPluginFuncs);
pluginFuncs->version = 9;
pluginFuncs->newp = 0;

netscapeFuncs->size = sizeof(NPNetscapeFuncs);
netscapeFuncs->version = 9;
netscapeFuncs->geturl = 0;

/*
 * NP_GetEntryPoints must be called first
 * initialize the netscapeFuncs structure, then the data is moved
 * to a static 'safe' spot in the call to NP_Initialize.  This is
 * not obvious from the docs (or just plain wrong.)  (It's clear
 * in the Netscape ONE book.  Not the online docs or Programming..Plugins)
 */

setPlugextEntryPoints(netscapeFuncs);
MyPrint("\naddr: %xx size: %d version: %d newp: %xx\n", pluginFuncs,
pluginFuncs->size, pluginFuncs->version, pluginFuncs->newp);
MyPrint("\naddr: %xx size: %d version: %d geturl: %xx\n", netscapeFuncs,
netscapeFuncs->size, netscapeFuncs->version, netscapeFuncs->geturl);

#if defined (_WIN32)
    init = (NPError (*)()) GetProcAddress(pluginData->dlopenHandle,
"NP_Initialize");
    if (init == NULL) {
        init = (NPError (*)()) GetProcAddress(pluginData->dlopenHandle,
"NP_PluginInit");
    }
    getent = (NPError (*)()) GetProcAddress(pluginData->dlopenHandle,
"NP_GetEntryPoints");
#else
    init = dlsym(pluginData->dlopenHandle, "NP_Initialize");
    if (init == NULL) {
        init = dlsym(pluginData->dlopenHandle, "NP_PluginUnixInit");
    }
#endif

if (init == NULL) {
    // dprintf("FAILED dlsym: %s\n", dlerror());
    setErrorReturns(interp,
        "Unable to load plugin.  Can't find NP_Initialize\n", NULL, NULL,NULL,

```

```

        "Unable to load plugin.  Can't find NP_Initialize\n", NULL, NULL,NULL,
        "plugext_loadInit", "510");
        // return TCL_ERROR;
    }

#if defined (_WIN32)

    getent = (NPError (*)()) GetProcAddress(pluginData->dlopenHandle,
"NP_GetEntryPoints");

    if (getent == NULL) {
        setErrorReturns(interp,
            "Unable to load plugin.  Can't find NP_GetEntryPoints\n", NULL,
NULL,NULL,
            "Unable to load plugin.  Can't find NP_GetEntryPoints\n", NULL,
NULL,NULL,
            "plugext_loadInit", "511");
        // dprintf("FAILED dlsym: %s\n", dlerror());
        return TCL_ERROR;
    }

    if (getent != NULL ) {
fprintf(logFl, "getent next\n"); fflush(stdout);
        err = getent(pluginFuncs);
fprintf(logFl, "getent DONE :err %d\n", err); fflush(stdout);
        if (err != NPERR_NO_ERROR) {
            return TCL_ERROR;
        }
    }

fprintf(logFl, "init next\n"); fflush(stdout);
    if ((init != NULL) && (err == NPERR_NO_ERROR)) {
        err = init(netscapeFuncs);
    }

#else

    if (getent != NULL ) {
fprintf(logFl, "init DONE - getent next\n"); fflush(stdout);
        err = getent(pluginFuncs);
fprintf(logFl, "getent DONE \n"); fflush(stdout);
    }

    if ((init != NULL) && (err == 0)) {
        err = init(netscapeFuncs, pluginFuncs);
    }

#endif
    if (err != NPERR_NO_ERROR) {
        return TCL_ERROR;
    }

fprintf(logFl, "init done\n"); fflush(stdout);

    MyPrint("\n size: %d version: %d newp: %xx\n", pluginFuncs->size,
pluginFuncs->version, pluginFuncs->newp);

```

```

    MyPrint("\n size: %d version: %d geturl: %xx\n", netscapeFuncs->size,
netscapeFuncs->version, netscapeFuncs->geturl);

    MyPrint("Blowing this popsicle stand: loadInit\n"); fflush(stdout);

    return TCL_OK;
}

/*-----*
 * CmdReturn *plugext_createCmd ()--
 *     Loads a plugin.so file.
#     Initializes the Function pointer tables.
#     Creates a new command to access the new plugin.
* Arguments
*     objv[0]:      "plugext"
*     objv[1]:      "create"
*     objv[2]:      ?pluginID?
*     objv[3]:      "-path"
*     objv[4]:      "path/to/plugin.so"
*
* Results
*     Creates a new hash entry. Sets error if entry already exists.
*
* Side Effects:
*     None
-----*/
CmdReturn *plugext_createCmd (ClientData info,
                           Tcl_Interp *interp,
                           int objc,
                           Tcl_Obj *objc[]) {
    Tcl_HashEntry *hashEntryPtr;
    CmdReturn *returnStructPtr;
    char *returnCharPtr = NULL;
    Tcl_Obj *returnObjPtr = NULL;

//    char *hashKeyPtr;
    int isNew;
    char hashName[80];
    PluginData *pluginData;

    char *pluginPath;
    char *tmp;
    int i;

    /* If the first arg starts with a "-", its a flag and there is no
     * hardcoded ID name (we choose one). If not, we grab that name.
     */
    tmp = TclGetStringFromObj(objv[2], NULL);

    if (*tmp != '-') {
        strcpy(hashName, TclGetStringFromObj(objv[2], NULL));
    } else {
        sprintf(hashName, "%s%d", "plugext", plugextID++);
    }

/*

```

```

 * Print that the function was called for debugging
 */

MyPrint("plugext_createCmd called with %d args : hashName: %s\n", objc,
hashName);

/*
 * create a return structure.
 */
returnStructPtr = (CmdReturn *) makeCmdReturn();

/* Initialize these parameters before we check for program settings */

pluginPath = NULL;

for (i=0; i<objc; i++) {
    if (!strcmp("-path", TclGetStringFromObj(objv[i], NULL))) {
        char *tmp;
        i++;
        tmp = TclGetStringFromObj(objv[i], NULL);
        pluginPath = Tcl_Alloc (strlen(tmp)+1);
        strcpy(pluginPath, tmp);

    }
}

if (pluginPath == NULL) {
    setErrorReturns(interp,
        "pluginName create must include -path", "", "", "",
        "No -path option", "", "", "",
        "pluginName create", "501");

    returnStructPtr->status = TCL_ERROR;
    goto done;
}

/*
 * Extract the string representation of the object argument,
 * and use that as a key into the hash table.
 *
 * If this entry already exists, complain.
 */
hashEntryPtr = Tcl_CreateHashEntry(plugext_hashtablePtr, hashName, &isNew);

if (!isNew) {
    setErrorReturns(interp,
        "Plugin named \"%s\" already exists.\n", hashName, "", "", "",
        "plugin with this name exists", "", "", "",
        "plugext create", "500");

    MyPrint("failed on isNew");

    returnStructPtr->status = TCL_ERROR;
    goto done;
}

```

```

/*
 * If we are here, then the key is unused.
 * Get the string representation from the object,
 * and make a copy that can be placed into the hash table.
 */

fprintf(logFl, "SIZE of PluginData: %d NPN: %d NPP: %d\n",
        sizeof(PluginData), sizeof(NP_NetscapeFuncs), sizeof(NP_PluginFuncs));

pluginData = (PluginData *) Tcl_Alloc (sizeof(PluginData));
Tcl_SetHashValue(hashEntryPtr, pluginData);

// dprintf("dlopen Next!: %s :: %xx :: %xx \n", pluginPath, NP_Initialize,
NP_New);

{
char *tmp;
tmp = strrchr(pluginPath, '/');
if (tmp == NULL) {
    tmp = strrchr(pluginPath, '\\');
}
if (tmp == NULL) {
    tmp = pluginPath;
}
pluginData->DLLname = tmp;
}

#if defined (_WIN32)
pluginData->dlopenHandle = LoadLibrary(pluginPath);
fprintf(logFl, "LoadLib: %xx\n", pluginData->dlopenHandle);
fprintf(logFl, "DLLNAME:: %s\n", pluginData->DLLname);
fprintf(stderr, "LoadLib: %xx\n", pluginData->dlopenHandle);

{
HMODULE hModule;
char name[255];
DWORD hInfo;
DWORD dwLen;

struct {
    WORD    first;
    WORD    second;
} *lpBuffer;

hModule = GetModuleHandle(pluginData->DLLname);

if (hModule == NULL) {
    setErrorReturns(interp,
        "Failed to get Module Handle for: %s\n", pluginData->DLLname,
NULL,NULL,
        "Failed to get Module Handle for: %s\n", pluginData->DLLname,
NULL,NULL,
        "plugextName_create", "515");
    // returnStructPtr->status = TCL_ERROR;
    pluginData->VersionData = (void *)Tcl_Alloc(8);
}

```

```

        strcpy(pluginData->VersionData, "-1.0");
    } else {

        GetModuleFileName(hModule, name, 255);
        dwLen = GetFileVersionInfoSize(name, &hInfo);

        if (dwLen == 0) {
            setErrorReturns(interp,
                "Failed to get dwLen", NULL, NULL,NULL,
                "Failed to get dwLen", NULL, NULL,NULL,
                "plugextName_getmimeCmd", "515");
            returnStructPtr->status = TCL_ERROR;
            goto done;
        }

        pluginData->VersionData = (void *)Tcl_Alloc(dwLen);

        GetFileVersionInfo(name, hInfo, dwLen, pluginData->VersionData);

        VerQueryValue(pluginData->VersionData, "\\VarFileInfo\\Translation",
                      (LPVOID*) &lpBuffer, (unsigned int *) &dwLen);

        if (dwLen == 0) {
            setErrorReturns(interp,
                "Failed to get second dwLen", NULL, NULL,NULL,
                "Failed to get second dwLen", NULL, NULL,NULL,
                "plugextName_getmimeCmd", "516");
            returnStructPtr->status = TCL_ERROR;
            goto done;
        }
    }
}

#endif

pluginData->dlopenHandle = dlopen(pluginPath, RTLD_NOW | RTLD_GLOBAL);
if (pluginData->dlopenHandle == NULL) {
    setErrorReturns(interp,
        "Unable to load %s.\n%s\n", pluginPath, dlerror(), NULL,
        "Unable to load %s.\n%s\n", pluginPath, dlerror(), NULL,
        "plugext_createCmd", "512");
    returnStructPtr->status = TCL_ERROR;
    goto done;
}
#endif

// dprintf("dlopen DONE!: %s :: %xx :: %xx \n", pluginPath, NP_Initialize,
// NPP_New);
//dprintf("dlopen DONE!: %s :: %xx :: %xx \n", pluginPath, dlsym(pluginData-
//>dlopenHandle, "NP_Initialize"), dlsym(pluginData->dlopenHandle, "NPP_New"));

MyPrint("set functPtr: %xx\n", pluginData);

/* Initialize the function pointers */

returnStructPtr->status = plugext_loadInit(interp, hashName);

```

```

if (returnStructPtr->status != TCL_OK) {goto done;}

done:

if (returnStructPtr->status == TCL_OK) {
    returnCharPtr = hashName;
    Tcl_CreateObjCommand(interp, hashName,
        (Tcl_ObjCmdProc *) plugextName_Cmd, 0, 0);
} else {
    returnCharPtr = "Failed to Load extension";
}

if ((returnObjPtr == NULL)) {
    returnObjPtr = Tcl_NewStringObj(returnCharPtr, -1);
}

returnStructPtr->object = returnObjPtr;

MyPrint("Leaving plugext createCmd \n"); fflush(stdout);

return returnStructPtr;
}

/***
NPError      NP_LOADDDS  NPP_New(NPMIMEType pluginType, NPP instance,
                                uint16 mode, int16 argc, char* argv[],
                                char* argv[], NPSavedData* saved) {
    fprintf(logFl, "This is a NEW dummy NPP_New to be overwritten\n");
}

NPError NP_Initialize(
    NPNetScapeFuncs *netscapeFuncs,
    NPPPluginFuncs *pluginFuncs) {
    fprintf(logFl, "This is a NEW dummy NP_Initialize to be overwritten\n");
}
*/

```

```
# Microsoft Developer Studio Project File - Name="plugext" - Package Owner=<4>
# Microsoft Developer Studio Generated Build File, Format Version 5.00
# ** DO NOT EDIT **

# TARGTYPE "Win32 (x86) Dynamic-Link Library" 0x0102

CFG=plugext - Win32 Debug
!MESSAGE This is not a valid makefile. To build this project using NMAKE,
!MESSAGE use the Export Makefile command and run
!MESSAGE
!MESSAGE NMAKE /f "plugext.mak".
!MESSAGE
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "plugext.mak" CFG="plugext - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "plugext - Win32 Release" (based on\
"Win32 (x86) Dynamic-Link Library")
!MESSAGE "plugext - Win32 Debug" (based on "Win32 (x86) Dynamic-Link Library")
!MESSAGE

# Begin Project
# PROP Scc_ProjName ""
# PROP Scc_LocalPath ""

CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF "$(CFG)" == "plugext - Win32 Release"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 0
# PROP BASE Output_Dir "Release"
# PROP BASE Intermediate_Dir "Release"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 0
# PROP Output_Dir "Release"
# PROP Intermediate_Dir "Release"
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX
/FD /c
# ADD CPP /nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" /YX /FD
/c
# ADD BASE MTL /nologo /D "NDEBUG" /mktyplib203 /o NUL /win32
# ADD MTL /nologo /D "NDEBUG" /mktyplib203 /o NUL /win32
# ADD BASE RSC /l 0x409 /d "NDEBUG"
# ADD RSC /l 0x409 /d "NDEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
```

```

# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:windows /dll /machine:I386
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:windows /dll /machine:I386

!ELSEIF  "$(CFG)" == "plugext - Win32 Debug"

# PROP BASE Use_MFC 0
# PROP BASE Use_Debug_Libraries 1
# PROP BASE Output_Dir "Debug"
# PROP BASE Intermediate_Dir "Debug"
# PROP BASE Target_Dir ""
# PROP Use_MFC 0
# PROP Use_Debug_Libraries 1
# PROP Output_Dir "Debug"
# PROP Intermediate_Dir "Debug"
# PROP Ignore_Export_Lib 0
# PROP Target_Dir ""
# ADD BASE CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /D "WIN32" /D "_DEBUG" /D
"_WINDOWS" /YX /FD /c
# ADD CPP /nologo /MTd /W3 /Gm /GX /Zi /Od /I "C:\tcl805\include" /D "WIN32" /D
"_DEBUG" /D "_WINDOWS" /YX /FD /c
# ADD BASE MTL /nologo /D "_DEBUG" /mktyplib203 /o NUL /win32
# ADD MTL /nologo /D "_DEBUG" /mktyplib203 /o NUL /win32
# ADD BASE RSC /l 0x409 /d "_DEBUG"
# ADD RSC /l 0x409 /d "_DEBUG"
BSC32=bscmake.exe
# ADD BASE BSC32 /nologo
# ADD BSC32 /nologo
LINK32=link.exe
# ADD BASE LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
/nologo /subsystem:windows /dll /debug /machine:I386 /pdbtype:sept
# ADD LINK32 kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib
C:\tcl805\lib\tcl80.lib C:\tcl805\lib\tk80.lib version.lib /nologo
/subsystem:windows /dll /debug /machine:I386 /pdbtype:sept

!ENDIF

# Begin Target

# Name "plugext - Win32 Release"
# Name "plugext - Win32 Debug"
# Begin Source File

SOURCE=.\\extensionLib.c
# End Source File
# Begin Source File

SOURCE=.\\extensionLib.h
# End Source File
# Begin Source File

SOURCE=.\\NPN_wrapper.c

```

```
# End Source File
# Begin Source File

SOURCE=.\\NPN_wrapper.h
# End Source File
# Begin Source File

SOURCE=.\\npupp.h
# End Source File
# Begin Source File

SOURCE=.\\plugext.c
# End Source File
# Begin Source File

SOURCE=.\\plugextCmd.c
# End Source File
# Begin Source File

SOURCE=.\\plugextCmdAZ.c
# End Source File
# Begin Source File

SOURCE=.\\plugextInt.h
# End Source File
# Begin Source File

SOURCE=.\\plugInstCmd.c
# End Source File
# Begin Source File

SOURCE=.\\plugInstCmdAZ.c
# End Source File
# Begin Source File

SOURCE=.\\tcl805.h
# End Source File
# End Target
# End Project
```

Microsoft Developer Studio Workspace File, Format Version 5.00
WARNING: DO NOT EDIT OR DELETE THIS WORKSPACE FILE!

#####

Project: "plugext"=.\\plugext.dsp - Package Owner=<4>

Package=<5>
{ {{
}}}

Package=<4>
{ {{
}}}

#####

Global:

Package=<5>
{ {{
}}}

Package=<3>
{ {{
}}}

#####

```

# Microsoft Developer Studio Generated NMAKE File, Based on plugext.dsp
!IF "$(CFG)" == ""
CFG=plugext - Win32 Debug
!MESSAGE No configuration specified. Defaulting to plugext - Win32 Debug.
!ENDIF

!IF "$(CFG)" != "plugext - Win32 Release" && "$(CFG)" != \
"plugext - Win32 Debug"
!MESSAGE Invalid configuration "$(CFG)" specified.
!MESSAGE You can specify a configuration when running NMAKE
!MESSAGE by defining the macro CFG on the command line. For example:
!MESSAGE
!MESSAGE NMAKE /f "plugext.mak" CFG="plugext - Win32 Debug"
!MESSAGE
!MESSAGE Possible choices for configuration are:
!MESSAGE
!MESSAGE "plugext - Win32 Release" (based on\
"Win32 (x86) Dynamic-Link Library")
!MESSAGE "plugext - Win32 Debug" (based on "Win32 (x86) Dynamic-Link Library")
!MESSAGE
!ERROR An invalid configuration is specified.
!ENDIF

!IF "$(OS)" == "Windows_NT"
NULL=
!ELSE
NULL=nul
!ENDIF

CPP=cl.exe
MTL=midl.exe
RSC=rc.exe

!IF "$(CFG)" == "plugext - Win32 Release"

OUTDIR=.\\Release
INTDIR=.\\Release
# Begin Custom Macros
OutDir=.\\Release
# End Custom Macros

!IF "$(RECURSE)" == "0"

ALL : "$(OUTDIR)\\plugext.dll"

!ELSE

ALL : "$(OUTDIR)\\plugext.dll"

!ENDIF

CLEAN :
    -@erase "$(INTDIR)\\extensionLib.obj"
    -@erase "$(INTDIR)\\NPN_wrapper.obj"
    -@erase "$(INTDIR)\\plugext.obj"
    -@erase "$(INTDIR)\\plugextCmd.obj"
    -@erase "$(INTDIR)\\plugextCmdAZ.obj"

```

```

-@erase "$(INTDIR)\plugInstCmd.obj"
-@erase "$(INTDIR)\plugInstCmdAZ.obj"
-@erase "$(INTDIR)\vc50.idb"
-@erase "$(OUTDIR)\plugext.dll"
-@erase "$(OUTDIR)\plugext.exp"
-@erase "$(OUTDIR)\plugext.lib"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$ (OUTDIR)"

CPP_PROJ=/nologo /MT /W3 /GX /O2 /D "WIN32" /D "NDEBUG" /D "_WINDOWS" \
/Fp"$(INTDIR)\plugext.pch" /YX /Fo"$(INTDIR)\\\" /Fd"$(INTDIR)\\\" /FD /c
CPP_OBJS=. \Release/
CPP_SBRS=.

MTL_PROJ=/nologo /D "NDEBUG" /mktyplib203 /o NUL /win32
BSC32=bscmake.exe
BSC32_FLAGS=/nologo /o"$(OUTDIR)\plugext.bsc"
BSC32_SBRS= \

LINK32=link.exe
LINK32_FLAGS=kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib \
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib \
odbccp32.lib /nologo /subsystem:windows /dll /incremental:no \
/pdb:"$(OUTDIR)\plugext.pdb" /machine:I386 /out:"$(OUTDIR)\plugext.dll" \
/implib:"$(OUTDIR)\plugext.lib"
LINK32_OBJS= \
    "$(INTDIR)\extensionLib.obj" \
    "$(INTDIR)\NPN_wrapper.obj" \
    "$(INTDIR)\plugext.obj" \
    "$(INTDIR)\plugextCmd.obj" \
    "$(INTDIR)\plugextCmdAZ.obj" \
    "$(INTDIR)\plugInstCmd.obj" \
    "$(INTDIR)\plugInstCmdAZ.obj"

"$(OUTDIR)\plugext.dll" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
        $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ELSEIF "$(CFG)" == "plugext - Win32 Debug"

OUTDIR=. \Debug
INTDIR=. \Debug
# Begin Custom Macros
OutDir=. \Debug
# End Custom Macros

!IF "$(RECURSE)" == "0"

ALL : "$(OUTDIR)\plugext.dll"

!ELSE

ALL : "$(OUTDIR)\plugext.dll"

!ENDIF

```

```

CLEAN :
-@erase "$(INTDIR)\extensionLib.obj"
-@erase "$(INTDIR)\NPN_wrapper.obj"
-@erase "$(INTDIR)\plugext.obj"
-@erase "$(INTDIR)\plugextCmd.obj"
-@erase "$(INTDIR)\plugextCmdAZ.obj"
-@erase "$(INTDIR)\plugInstCmd.obj"
-@erase "$(INTDIR)\plugInstCmdAZ.obj"
-@erase "$(INTDIR)\vc50.idb"
-@erase "$(INTDIR)\vc50.pdb"
-@erase "$(OUTDIR)\plugext.dll"
-@erase "$(OUTDIR)\plugext.exp"
-@erase "$(OUTDIR)\plugext.ilk"
-@erase "$(OUTDIR)\plugext.lib"
-@erase "$(OUTDIR)\plugext.pdb"

"$(OUTDIR)" :
    if not exist "$(OUTDIR)/$(NULL)" mkdir "$(OUTDIR)"

CPP_PROJ=/nologo /MTd /W3 /Gm /GX /Zi /Od /I "C:\tcl805\include" /D "WIN32" /D \
"_DEBUG" /D "_WINDOWS" /Fp"$(INTDIR)\plugext.pch" /YX /Fo"$(INTDIR)\\\" \
/Fd"$(INTDIR)\\\" /FD /c
CPP_OBJS=.\\Debug/
CPP_SBRS=.
MTL_PROJ=/nologo /D "_DEBUG" /mktyplib203 /o NUL /win32
BSC32=bscmake.exe
BSC32_FLAGS=/nologo /o"$(OUTDIR)\plugext.bsc"
BSC32_SBRS= \
LINK32=link.exe
LINK32_FLAGS=kernel32.lib user32.lib gdi32.lib winspool.lib comdlg32.lib\
advapi32.lib shell32.lib ole32.lib oleaut32.lib uuid.lib odbc32.lib\
odbccp32.lib C:\tcl805\lib\tcl80.lib C:\tcl805\lib\tk80.lib version.lib\
/nologo /subsystem:windows /dll /incremental:yes /pdb:"$(OUTDIR)\plugext.pdb"\ \
/debug /machine:I386 /out:"$(OUTDIR)\plugext.dll"\ \
/implib:"$(OUTDIR)\plugext.lib" /pdbtype:sept
LINK32_OBJS= \
    "$(INTDIR)\extensionLib.obj" \
    "$(INTDIR)\NPN_wrapper.obj" \
    "$(INTDIR)\plugext.obj" \
    "$(INTDIR)\plugextCmd.obj" \
    "$(INTDIR)\plugextCmdAZ.obj" \
    "$(INTDIR)\plugInstCmd.obj" \
    "$(INTDIR)\plugInstCmdAZ.obj"

"$(OUTDIR)\plugext.dll" : "$(OUTDIR)" $(DEF_FILE) $(LINK32_OBJS)
    $(LINK32) @<<
    $(LINK32_FLAGS) $(LINK32_OBJS)
<<

!ENDIF

.c{$(CPP_OBJS)}.obj::
    $(CPP) @<<
    $(CPP_PROJ) $(
<<

```

```

.cpp{$(CPP_OBJS)}.obj::  

$(CPP) @<<  

$(CPP_PROJ) $<  

<<  

.cxx{$(CPP_OBJS)}.obj::  

$(CPP) @<<  

$(CPP_PROJ) $<  

<<  

.c{$(CPP_SBRS)}.sbr::  

$(CPP) @<<  

$(CPP_PROJ) $<  

<<  

.cpp{$(CPP_SBRS)}.sbr::  

$(CPP) @<<  

$(CPP_PROJ) $<  

<<  

.cxx{$(CPP_SBRS)}.sbr::  

$(CPP) @<<  

$(CPP_PROJ) $<  

<<  

  

!IF "$(CFG)" == "plugext - Win32 Release" || "$(CFG)" ==\  

"plugext - Win32 Debug"  

SOURCE=.\\extensionLib.c  

  

!IF "$(CFG)" == "plugext - Win32 Release"  

  

DEP_CPP_EXTEN=\  

".\\extensionLib.h"\  

".\\tcl805.h"\  

  

"$(INTDIR)\\extensionLib.obj" : $(SOURCE) $(DEP_CPP_EXTEN) "$(INTDIR)"  

  

!ELSEIF "$(CFG)" == "plugext - Win32 Debug"  

  

DEP_CPP_EXTEN=\  

".\\extensionLib.h"\  

".\\tcl805.h"\  

  

"$(INTDIR)\\extensionLib.obj" : $(SOURCE) $(DEP_CPP_EXTEN) "$(INTDIR)"  

  

!ENDIF  

  

SOURCE=.\\NPN_wrapper.c  

  

!IF "$(CFG)" == "plugext - Win32 Release"  

  

DEP_CPP_NPN_W=\

```

```

".\extensionLib.h"\
".\jri.h"\
".\jri_md.h"\
".\npapi.h"\
".\npupp.h"\
".\plugextInt.h"\
".\tcl805.h"\

"$(INTDIR)\NPN_wrapper.obj" : $(SOURCE) $(DEP_CPP_NPN_W) "$(INTDIR)"

!ELSEIF "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_NPN_W=\
".\extensionLib.h"\
".\jri.h"\
".\jri_md.h"\
".\npapi.h"\
".\npupp.h"\
".\plugextInt.h"\
".\tcl805.h"\

"$(INTDIR)\NPN_wrapper.obj" : $(SOURCE) $(DEP_CPP_NPN_W) "$(INTDIR)"

!ENDIF

SOURCE=.\\plugext.c

!IF "$(CFG)" == "plugext - Win32 Release"

DEP_CPP_PLUGE=\
".\extensionLib.h"\
".\jri.h"\
".\jri_md.h"\
".\npapi.h"\
".\NPN_wrapper.h"\
".\npupp.h"\
".\plugextInt.h"\
".\tcl805.h"\

"$(INTDIR)\plugext.obj" : $(SOURCE) $(DEP_CPP_PLUGE) "$(INTDIR)"

!ELSEIF "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_PLUGE=\
".\extensionLib.h"\
".\jri.h"\
".\jri_md.h"\
".\npapi.h"\
".\NPN_wrapper.h"\
".\npupp.h"\
".\plugextInt.h"\
```

```

".\tcl805.h"\

"$(INTDIR)\plugext.obj" : $(SOURCE) $(DEP_CPP_PLUGE) "$(INTDIR)"

!ENDIF

SOURCE=.\\plugextCmd.c

!IF  "$(CFG)" == "plugext - Win32 Release"

DEP_CPP_PLUGEX=\
    ".\\extensionLib.h"\
    ".\\jri.h"\
    ".\\jri_md.h"\
    ".\\npapi.h"\
    ".\\npupp.h"\
    ".\\plugextInt.h"\
    ".\\tcl805.h"\

"$(INTDIR)\plugextCmd.obj" : $(SOURCE) $(DEP_CPP_PLUGEX) "$(INTDIR)"

!ELSEIF  "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_PLUGEX=\
    ".\\extensionLib.h"\
    ".\\jri.h"\
    ".\\jri_md.h"\
    ".\\npapi.h"\
    ".\\npupp.h"\
    ".\\plugextInt.h"\
    ".\\tcl805.h"\

"$(INTDIR)\plugextCmd.obj" : $(SOURCE) $(DEP_CPP_PLUGEX) "$(INTDIR)"

!ENDIF

SOURCE=.\\plugextCmdAZ.c

!IF  "$(CFG)" == "plugext - Win32 Release"

DEP_CPP_PLUGEXT=\
    ".\\extensionLib.h"\
    ".\\jri.h"\
    ".\\jri_md.h"\
    ".\\npapi.h"\
    ".\\npupp.h"\
    ".\\plugextInt.h"\
    ".\\tcl805.h"\

"$(INTDIR)\plugextCmdAZ.obj" : $(SOURCE) $(DEP_CPP_PLUGEXT) "$(INTDIR)"

```

```

!ELSEIF  "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_PLUGEXT=\
    ".\extensionLib.h\"\
    ".\jri.h\"\
    ".\jri_md.h\"\
    ".\npapi.h\"\
    ".\npupp.h\"\
    ".\plugextInt.h\"\
    ".\tcl805.h\""

"$(INTDIR)\plugextCmdAZ.obj" : $(SOURCE) $(DEP_CPP_PLUGEXT) "$(INTDIR)"

!ENDIF

SOURCE=.\\plugInstCmd.c

!IF  "$(CFG)" == "plugext - Win32 Release"

DEP_CPP_PLUGI=\
    ".\extensionLib.h\"\
    ".\jri.h\"\
    ".\jri_md.h\"\
    ".\npapi.h\"\
    ".\npupp.h\"\
    ".\plugextInt.h\"\
    ".\tcl805.h\"

"$(INTDIR)\plugInstCmd.obj" : $(SOURCE) $(DEP_CPP_PLUGI) "$(INTDIR)"

!ELSEIF  "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_PLUGI=\
    ".\extensionLib.h\"\
    ".\jri.h\"\
    ".\jri_md.h\"\
    ".\npapi.h\"\
    ".\npupp.h\"\
    ".\plugextInt.h\"\
    ".\tcl805.h\"

"$(INTDIR)\plugInstCmd.obj" : $(SOURCE) $(DEP_CPP_PLUGI) "$(INTDIR)"

!ENDIF

SOURCE=.\\plugInstCmdAZ.c

!IF  "$(CFG)" == "plugext - Win32 Release"

```

```

DEP_CPP_PLUGIN=\
  ".\extensionLib.h"\
  ".\jri.h"\
  ".\jri_md.h"\
  ".\npapi.h"\
  ".\npupp.h"\
  ".\plugextInt.h"\
  ".\tcl805.h"

NODEP_CPP_PLUGIN=\
  ".\tk.h"

"$(INTDIR)\plugInstCmdAZ.obj" : $(SOURCE) $(DEP_CPP_PLUGIN) "$(INTDIR)"

!ELSEIF "$(CFG)" == "plugext - Win32 Debug"

DEP_CPP_PLUGIN=\
  ".\extensionLib.h"\
  ".\jri.h"\
  ".\jri_md.h"\
  ".\npapi.h"\
  ".\npupp.h"\
  ".\plugextInt.h"\
  ".\tcl805.h"\
  "c:\tcl805\include\tk.h"\
  "c:\tcl805\include\x11\x.h"\
  "c:\tcl805\include\x11\xfuncproto.h"\
  "c:\tcl805\include\x11\xlib.h"

"$(INTDIR)\plugInstCmdAZ.obj" : $(SOURCE) $(DEP_CPP_PLUGIN) "$(INTDIR)"

!ENDIF

!ENDIF

```

```
-----Configuration: plugext - Win32 Debug-----
Beginning build with project "F:\Win\Plugext\plugext.dsp", at root.
Active configuration is Win32 (x86) Dynamic-Link Library (based on Win32 (x86)
Dynamic-Link Library)

Project's tools are:
    "32-bit C/C++ Compiler for 80x86" with flags "/nologo /MTd /W3
/Gm /GX /Zi /Od /I "C:\tcl805\include" /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/Fp"Debug/plugext.pch" /YX /Fo"Debug/" /Fd"Debug/" /FD /c "
    "OLE Type Library Maker" with flags "/nologo /D "_DEBUG"
/mktypelib203 /o NUL /win32 "
    "Win32 Resource Compiler" with flags "/l 0x409 /d "_DEBUG" "
    "Browser Database Maker" with flags "/nologo
/o"Debug/plugext.bsc" "
    "COFF Linker for 80x86" with flags "kernel32.lib user32.lib
gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib ole32.lib
oleaut32.lib uuid.lib odbc32.lib odbccp32.lib C:\tcl805\lib\tcl80.lib
C:\tcl805\lib\tk80.lib version.lib /nologo /subsystem:windows /dll
/incremental:yes /pdb:"Debug/plugext.pdb" /debug /machine:I386
/out:"Debug/plugext.dll" /implib:"Debug/plugext.lib" /pdbtype:sept "
    "Custom Build" with flags ""
    "<Component 0xa>" with flags ""

Creating temp file "C:\WINDOWS\TEMP\RSPD0D5.TMP" with contents </nologo /MTd /W3
/Gm /GX /Zi /Od /I "C:\tcl805\include" /D "WIN32" /D "_DEBUG" /D "_WINDOWS"
/Fp"Debug/plugext.pch" /YX /Fo"Debug/" /Fd"Debug/" /FD /c
"F:\Win\Plugext\plugInstCmdAZ.c"
>
Creating command line "cl.exe @C:\WINDOWS\TEMP\RSPD0D5.TMP"
Creating temp file "C:\WINDOWS\TEMP\RSPD0D6.TMP" with contents <kernel32.lib
user32.lib gdi32.lib winspool.lib comdlg32.lib advapi32.lib shell32.lib
ole32.lib oleaut32.lib uuid.lib odbc32.lib odbccp32.lib C:\tcl805\lib\tcl80.lib
C:\tcl805\lib\tk80.lib version.lib /nologo /subsystem:windows /dll
/incremental:yes /pdb:"Debug/plugext.pdb" /debug /machine:I386
/out:"Debug/plugext.dll" /implib:"Debug/plugext.lib" /pdbtype:sept
.\Debug\extensionLib.obj
.\Debug\NPN_wrapper.obj
.\Debug\plugext.obj
.\Debug\plugextCmd.obj
.\Debug\plugextCmdAZ.obj
.\Debug\plugInstCmd.obj
.\Debug\plugInstCmdAZ.obj>
Creating command line "link.exe @C:\WINDOWS\TEMP\RSPD0D6.TMP"
Compiling...
plugInstCmdAZ.c
F:\Win\Plugext\plugInstCmdAZ.c(89) : warning C4013: 'MyPrint' undefined;
assuming extern returning int
F:\Win\Plugext\plugInstCmdAZ.c(826) : warning C4133: 'function' : incompatible
types - from 'int *' to 'unsigned short *'
Linking...
```

plugext.dll - 0 error(s), 2 warning(s)

```
/*
 * plugextCmd.c --
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 *
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 */
/* Include the usual suspects. */

#if defined (_WIN32)
#include <windows.h>
#endif
#include "stdlib.h"
#include "ctype.h"
#include "plugextInt.h"

#define plugextCMD_REVISION "$Revision: 1.9 $"

extern int plugextDebugPrint;

/*
 * Define the sub commands
 *
 * These strings define the subcommands that the plugext command
 * supports.
 *
 * To add a new subcommand, add the new subcommand string,
 * #define and entry in cmdDefinition
 *
 * Note: Order is important.
 *
 * These are the subcommands that will be recognized
 *
*/
static char *subcommands[] = {
    "new", "destroy", "children", "getmime", "bogus", NULL};

/*
 * These #defines define the positions of the subcommands.
 * You can use enums if you are certain your compiler will provide the
 * same numbers as this.
```

```

*/
#define M_new 0
#define M_destroy 1
#define M_children 2
#define M_getmime 3
#define M_bogus 4

/*
 * The cmdDefinition structure describes the minimum and maximum number
 * of expected arguments for the subcommand (including cmd and subcommand
 * names), and a usage message to return if the argument
 * count is outside the expected range.
*/

static cmdDefinition definitions[] = {
    {"new ?name? -mime Mimetype -mode ?FULL, EMBED, BACKGROUND? ?-embed args?", 6, 9},
    {"destroy pluginName", 3, 3},
    {"children pluginName", 3, 3},
    {"getmime ", 2, 2},
    {"bogus bogusval", 3, 3}
};

/* ----- C++ Comment
// These are the segments that need to be declared in the "C" namespace
// These function names and data will be accessed by programs in the
// Tcl "C" language library.
*/

/*
extern "C" {

/*
-----
*
* plugextName_Cmd --
*
*     plugextName_Cmd is invoked to process the "pluginName" Tcl command.
*     It will parse a subcommand, and perform the requested action.
*
* Results:
*     A standard Tcl result.
*
* Side effects:
*
*-----
*/
int plugextName_Cmd(ClientData plugext,
                     Tcl_Interp *interp,
                     int objc,
                     Tcl_Obj *objv[]) {

    /* ClientData plugext;           /* Not used. */
    /* Tcl_Interp *interp;          /* Current interpreter. */

```

```

/* int objc;           /* Number of arguments. */
/* Tcl_Obj *CONST objv[];    /* Argument objects. */

int cmdnum;
int result;
Tcl_Obj *returnValue;
CmdReturn *returnStruct;

/*
 * Initialize the return value
 */

returnValue = NULL;
returnStruct = NULL;

/*
 * Check that we have at least a subcommand,
 * else return an Error and the usage message
 */
if (objc < 2) {
    Tcl_WrongNumArgs(interp, 1, objv,
                      "subcommand ?fieldName? ?fieldValue?");
    return TCL_ERROR;
}

/*
 * Find this plugext subcommand in the list of subcommands.
 * Tcl_GetIndexFromObj returns the offset of the recognized string,
 * which is used to index into the command definitions table.
 */
result = Tcl_GetIndexFromObj(interp, objv[1], subcommands,
                             "subcommand", TCL_EXACT, &cmdnum);

/*
 * If the result is not TCL_OK, then the error message is already
 * in the Tcl Interpreter, this code can immediately return.
 */
if (result != TCL_OK) {
    return TCL_ERROR;
}

/*
 * Check that the argument count matches what's expected for this
 * Subcommand.
*/
if ((objc < definitions[cmdnum].minArgCnt) ||
    (objc > definitions[cmdnum].maxArgCnt) ) {
    Tcl_WrongNumArgs(interp, 1, objv, definitions[cmdnum].usage);
    return TCL_ERROR;
}

result = TCL_OK;

```

```

/*
 * The subcommand is recognized, and has a valid number of arguments
 * Process the command.
 */

switch (cmdnum) {
    case M_new: {
        returnStruct =
            plugextName_newCmd(NULL, interp, objc, objv);
        break;
    }
    case M_destroy: {
        returnStruct =
            plugextName_destroyCmd(NULL, interp, objc, objv);
        break;
    }
    case M_children: {
        returnStruct =
            plugextName_childrenCmd(NULL, interp, objc, objv);
        break;
    }
    case M_getmime: {
        returnStruct =
            plugextName_getmimeCmd(NULL, interp, objc, objv);
        break;
    }
    default: {
        char error[80];
        sprintf(error, "Bad sub-command %s. Has no entry in switch",
            TclGetStringFromObj(objv[1], NULL));
        returnValue = Tcl_NewStringObj(error, -1);
        result = TCL_ERROR;
    }
}

/*
 * Extract an object to return from returnStruct.
 * returnStruct will be NULL if the processing is done in this
 * function and no other function is called.
 */
if (returnStruct != NULL) {
    returnValue = returnStruct->object;
    result = returnStruct->status;
    Tcl_Free ((char *)returnStruct);
}

/*
 * Set the return value and return the status
 */
if (returnValue != NULL) {
    Tcl_SetObjResult(interp, returnValue);
}

debugprt("leaving plugext Cmd\n"); fflush(stdout);

```

```
    return result;
}
/* ----- C++ Comment
// This is the close of the extern "C" section
*/
/*
}
*/
```

```

/*
 * plugextCmdAZ.c --
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 * PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.
 */
/* Include the usual suspects. */

#ifndef _WIN32
#include <windows.h>
#endif
#include "stdlib.h"
#include <stdio.h>
#include "ctype.h"
#if defined (_WIN32)^M
#else
#include <dlfcn.h>
#endif
#include "plugextInt.h"
#include "extensionLib.h"

static int pluginNameID = 0;

extern Tcl_HashTable *plugext_hashtablePtr;
extern int plugextDebugPrint;

#define PLUGEXTCMDAZ_REVISION "$Revision: 1.14 $"

/*
-----*
* CmdReturn *plugextName_newCmd ()--
*     Demonstrates creating a hash entry.
*     Creates a hash entry for Key, with value String
* Arguments
*     objv[0]:      "plugext"
*     objv[1]:      "load"
*     objv[2]:      fileName
*     objv[3]:      ?IDString?
*
* Results
*     Creates a new hash entry. Sets error if entry already exists.
*

```

```

* Side Effects:
*   None
-----*/
CmdReturn *plugextName_newCmd (ClientData info,
    Tcl_Interp *interp,
    int objc,
    Tcl_Obj *objv[]) {
Tcl_HashEntry *hashEntryPtr;
CmdReturn *returnStructPtr;
char hashName[90];

char *hashKeyPtr;
int isNew;
NPP_t *NPPHandle;
PluginData *pluginData;
InstanceData *instanceData;

NPError (*NPPNew)(); /* Pointer to the NPP_New function */

char *pluginName = NULL; /* The name assigned when the plugin was loaded */

char *mimeType;
int mode;
int i, keyvalCount;
/* Hardcoding array sizes is evil, but I think this will fly. */
char *tmp, *keyval, *keys[30], *vals[30];
int status;

/*
 * Print that the function was called for debugging
 */
MyPrint("plugextName_newCmd called with %d args : hashName: %s\n",
    TclGetStringFromObj(objv[2], NULL));

keyvalCount = 0;

/*
 * Allocate the space and initialize the return structure.
 */
returnStructPtr = makeCmdReturn();

/* Confirm that the name is valid (it should be!) and we've got
 * a hash table entry for the plugin Data */

pluginName = TclGetStringFromObj(objv[0], NULL);

pluginData = (PluginData *) getHashData(interp, pluginName,
plugext_hashtablePtr);

if (pluginData == NULL) {
    setErrorReturns(interp,
        "Plugin named \"%s\" does not exists.\n", pluginName, "", "", 
        "Plugin named \"%s\" does not exists.\n", pluginName, "", "", 
        "pluginName create", "500");
}

```

```

        returnStructPtr->status = TCL_ERROR;
        goto done;
    }

/* If the first arg starts with a "--", its a flag and there is no
 * hardcoded ID name (we choose one).  If not, we grab that name.
 */

tmp = TclGetStringFromObj(objv[2], NULL);

if (*tmp != '-') {
    strcpy(hashName, TclGetStringFromObj(objv[2], NULL));
} else {
    sprintf(hashName, "%s%d", pluginName, pluginNameID++);
}

/*
 * Extract the string representation of the object argument,
 * and use that as a key into the hash table.
 *
 * If this entry already exists, complain.
 */

hashEntryPtr = TclCreateHashEntry(plugext_hashtablePtr, hashName, &isNew);

if (!isNew) {
    setErrorReturns(interp,
        "Plugin named \"%s\" already exists.\n", hashKeyPtr, "", "", 
        "plugin with this name exists", "", "", "", 
        "pluginName create", "500");

    MyPrint("failed on isNew");

    returnStructPtr->status = TCL_ERROR;
    goto done;
}

/*
 * If we are here, then the key is unused.
 * Get the string representation from the object,
 * and make a copy that can be placed into the hash table.
 */

instanceData = (InstanceData *) TclAlloc(sizeof(InstanceData));
TclSetHashValue(hashEntryPtr, instanceData);

TclListObjAppendElement(interp, pluginData->childList,
    TclNewStringObj(hashName, -1));

MyPrint("set NPP instanceData: %x PluginData: %x\n", instanceData,
pluginData);

/* Initialize the function pointers */

instanceData->netscapeFuncs = &pluginData->netscapeFuncs;
instanceData->pluginFuncs = &pluginData->pluginFuncs;
instanceData->pluginReadStream = NULL;

```

```

instanceData->pluginWriteStream = NULL;
instanceData->win = NULL;
instanceData->readBuffer = NULL;
instanceData->readLen = 0;
instanceData->readSize = 0;
instanceData->readOffset = 0;
instanceData->putsBuffer = NULL;
instanceData->streamType = "No Stream";

instanceData->saved = (NPSavedData *) Tcl_Alloc(sizeof(NPSavedData));
instanceData->saved->len = 0;
instanceData->saved->buf = NULL;
instanceData->interp = interp;

if (returnStructPtr->status != TCL_OK) {goto done;}

/* Initialize these parameters before we check for program settings */

mode = NP_FULLSCREEN;
mimeType = "text/html";

for (i=0; i<objc; i++) {
    if (!strcmp("-mime", TclGetStringFromObj(objv[i], NULL))) {
        i++;
        mimeType = TclGetStringFromObj(objv[i], NULL);
    }
    if (!strcmp("-mode", TclGetStringFromObj(objv[i], NULL))) {
        i++;
        tmp = TclGetStringFromObj(objv[i], NULL);
        if (!strcmp("FULL", tmp)) {
            mode = NP_FULLSCREEN;
        }
        if (!strcmp("EMBED", tmp)) {
            mode = NP_EMBED;
        }
        if (!strcmp("BACKGROUND", tmp)) {
            mode = NP_BACKGROUND;
        }
    }
    if (!strcmp("-embed", TclGetStringFromObj(objv[i], NULL))) {
        i++;
        tmp = TclGetStringFromObj(objv[i], NULL);
        /* tmp == foo=bar baz=abc key="value" */

        keyval = Tcl_Alloc(strlen(tmp)+1);
        strcpy(keyval, tmp);
        tmp = keyval;
        while (*tmp != 0) {
            keys[keyvalCount] = tmp;
            while (*tmp != '=') tmp++;
            *tmp++ = 0;
            if (*tmp == '') tmp++;
            vals[keyvalCount] = tmp;
            while ((*tmp != ' ') && (*tmp != 0) && (*tmp != '')) tmp++;
            if (*tmp != 0) {
                *tmp = 0;
                tmp++;
            }
        }
    }
}

```

```

        while (
            ((*tmp == ' ') || (*tmp == '\"'))
            && (*tmp != 0)
            ) tmp++;
    }
    keyvalCount++;
}
}

for (i=0; i<keyvalCount; i++) {
    MyPrint("pos: %d key: %s val: %s\n", i, keys[i], vals[i]);
}

NPPHandle = (NPP_t *) Tcl_Alloc (sizeof(NPP_t));

MyPrint("NPPHandle: %xx instanceData/pdata: %xx MODE: %d \n", NPPHandle,
instanceData, mode);

instanceData->handle = NPPHandle;

NPPHandle->nData = NULL;
NPPHandle->pData = NULL;

/*
 * KLUDGE - SHOULD ALLOW FOR ALTERNATIVE ARGS TO BE PASSED
 */

{
NPPluginFuncs *pf;
pf = instanceData->pluginFuncs;
NPPNew = pf->newp;
}

if (NPPNew == NULL) {
    char *strErrno;
    strErrno = Tcl_Alloc(99);
    sprintf(strErrno, "%xx", pluginData->dlopenHandle);
    setErrorReturns(interp,
        "Unable to create new plugin.  Can't find NPP_New\n",
        "Unable to create new plugin.  Can't find NPP_New\n",
        "plugextName_newCmd", strErrno);
    returnStructPtr->status = TCL_ERROR;
    goto done;
}

MyPrint("PRE NPP_New NPPHandle: %xx instanceData %xx Handle->pdata: %xx\n",
NPPHandle, instanceData, NPPHandle->pdata);

status = NPPNew(mimeType, NPPHandle, mode, keyvalCount, keys, vals,
instanceData->saved);

MyPrint("POST NPP_New NPPHandle: %xx instanceData %xx Handle->pdata: %xx\n",
NPPHandle, instanceData, NPPHandle->pdata);
/*      status = NPP_New(mimeType, NPPHandle, mode, 0, NULL, NULL, instanceData-
>saved); */

```

```

if (status != NPERR_NO_ERROR) {
    char err[80];
    sprintf(err, "%d", status);
    Tcl_SetErrorCode(interp, err, (char *)NULL);
    sprintf(err, "NPP_New failed on status: %d\n", status);
    Tcl_AddObjErrorInfo(interp, err, strlen(err));
    Tcl_AddErrorInfo(interp, "error in plugext_loadCmd");
    returnStructPtr->status = TCL_ERROR;
}

Tcl_CreateObjCommand(interp, hashName,
    (Tcl_ObjCmdProc *) plugInst_Cmd, 0, 0);

done:
if (returnStructPtr->status == TCL_OK) {
    returnStructPtr->object = Tcl_NewStringObj(hashName, -1);
} else {
    returnStructPtr->object =
        Tcl_NewStringObj("Failed to create new plugin instance", -1);
}

MyPrint("Leaving loadCmd \n"); fflush(stdout);

return returnStructPtr;
}

/*
*-----*
* CmdReturn *plugextName_childrenCmd ()--
*     Demonstrates creating a hash entry.
*     Creates a hash entry for Key, with value String
* Arguments
*     objv[0]:      "plugext"
*     objv[1]:      "load"
*     objv[2]:      fileName
*     objv[3]:      ?IDString?
*
* Results
*     Creates a new hash entry. Sets error if entry already exists.
*
* Side Effects:
*     None
*-----*/
CmdReturn *plugextName_childrenCmd (ClientData info,
    Tcl_Interp *interp,
    int objc,
    Tcl_Obj *objv[]) {

CmdReturn *returnStructPtr;

PluginData *pluginData;
char *pluginName = NULL; /* The name assigned when the plugin was loaded */

/*
 * Print that the function was called for debugging
 */

```

```

MyPrint("plugextName_childrenCmd called with %d args : hashName: %s\n",
       objc, TclGetStringFromObj(objv[2], NULL));

/*
 * Allocate the space and initialize the return structure.
 */

returnStructPtr = makeCmdReturn();

/* Confirm that the name is valid (it should be!) and we've got
 * a hash table entry for the plugin Data */

pluginName = TclGetStringFromObj(objv[0], NULL);

pluginData = (PluginData *) getHashData(interp, pluginName,
    plugext_hashtablePtr);

if (pluginData == NULL) {
    returnStructPtr->status = TCL_ERROR;
    goto done;
}

returnStructPtr->object = pluginData->childList;

done:

MyPrint("Leaving loadCmd \n"); fflush(stdout);

return returnStructPtr;
}

/*
-----*
* CmdReturn *plugextName_getmimeCmd ()--
*     Demonstrates creating a hash entry.
*     Creates a hash entry for Key, with value String
* Arguments
*     objv[0]:      "plugext"
*     objv[1]:      "load"
*     objv[2]:      fileName
*     objv[3]:      ?IDString?
*
* Results
*     Creates a new hash entry. Sets error if entry already exists.
*
* Side Effects:
*     None
-----*/
CmdReturn *plugextName_getmimeCmd (ClientData info,
                                  Tcl_Interp *interp,
                                  int objc,
                                  Tcl_Obj *objv[]) {

CmdReturn *returnStructPtr;

```

```

PluginData *pluginData;
char *pluginName = NULL; /* The name assigned when the plugin was loaded */
char *mimeString;
char * (*NPPMimeDesc)(); /* Pointer to the NPP_Mime description function */

char *tmpMIME;
tmpMIME = Tcl_Alloc(99);

/*
 * Print that the function was called for debugging
 */

MyPrint("plugextName_getmimeCmd called with %d args : hashName: %s\n",
        objc, TclGetStringFromObj(objv[2], NULL));

/*
 * Allocate the space and initialize the return structure.
 */

returnStructPtr = makeCmdReturn();

/* Confirm that the name is valid (it should be!) and we've got
 * a hash table entry for the plugin Data */

pluginName = TclGetStringFromObj(objv[0], NULL);

pluginData = (PluginData *) getHashData(interp, pluginName,
    plugext_hashtablePtr);

if (pluginData == NULL) {
    returnStructPtr->status = TCL_ERROR;
    goto done;
}

#if defined (_WIN32)
{
    DWORD dwLen;
    char name[255];

    BOOL bRet;
    char *value;
    int len;

    struct {
        WORD first;
        WORD second;
    } *lpBuffer;
}

VerQueryValue(pluginData->VersionData, "\\VarFileInfo\\Translation",
    (LPVOID*) &lpBuffer, (unsigned int *) &dwLen);

if (dwLen == 0) {
    setErrorReturns(interp,
        "Failed to get second dwLen", NULL, NULL, NULL,
        "Failed to get second dwLen", NULL, NULL, NULL,

```

```

        "plugextName_getmimeCmd",    "516");
    returnStructPtr->status =  TCL_ERROR;
    goto done;
}

wsprintf(name, "\StringFileInfo\%04x%04x\MIMEType",
          lpBuffer->first, lpBuffer->second);

bRet = VerQueryValue(pluginData->VersionData, name, &value, &len);

if (!bRet) {
    setErrorReturns(interp,
      "Failed to get MIMEType", NULL, NULL,NULL,
      "Failed to get MIMEType", NULL, NULL,NULL,
      "plugextName_getmimeCmd", "517");
    returnStructPtr->status =  TCL_ERROR;
    goto done;
}

mimeString = value;

}
#else
NPPMimeDesc = dlsym(pluginData->dlopenHandle, "NPP_GetMIMEDescription");
if (NPPMimeDesc == NULL) {
    NPPMimeDesc = dlsym(pluginData->dlopenHandle, "NP_GetMIMEDescription");
}
if (NPPMimeDesc == NULL) {
    setErrorReturns(interp,
      "Unable to determine MIDI type.  Can't find NP_GetMIMEDescription",
NULL, NULL,NULL,
      "Unable to determine MIDI type.  Can't find NP_GetMIMEDescription",
NULL, NULL,NULL,
      "plugextName_getmimeCmd", "513");
    returnStructPtr->status =  TCL_ERROR;
}

if (NPPMimeDesc == NULL) {
    mimeString = "Unknown/unknown";
} else {
    mimeString = NPPMimeDesc();
}

#endif

returnStructPtr->object = Tcl_NewStringObj(mimeString, -1);

done:

MyPrint("Leaving loadCmd \n"); fflush(stdout);

return returnStructPtr;
}

/*
-----
```

```

* CmdReturn *plugextName_destroyCmd () --
*   Demonstrates creating a hash entry.
*   Creates a hash entry for Key, with value String
* Arguments
*   objv[0]:      "plugext"
*   objv[1]:      "load"
*   objv[2]:      fileName
*   objv[3]:      ?IDString?
*
* Results
*   Creates a new hash entry. Sets error if entry already exists.
*
* Side Effects:
*   None
-----*/
CmdReturn *plugextName_destroyCmd (ClientData info,
                                   Tcl_Interp *interp,
                                   int objc,
                                   Tcl_Obj *objv[]) {

    CmdReturn *returnStructPtr;

    PluginData *pluginData;
    char *pluginName = NULL; /* The name assigned when the plugin was loaded */

    /*
     * Print that the function was called for debugging
     */

    MyPrint("plugextName_destroyCmd called with %d args : hashName: %s\n",
           objc, TclGetStringFromObj(objv[2], NULL));

    /*
     * Allocate the space and initialize the return structure.
     */

    returnStructPtr = makeCmdReturn();

    /* Confirm that the name is valid (it should be!) and we've got
     * a hash table entry for the plugin Data */

    pluginName = TclGetStringFromObj(objv[0], NULL);

    pluginData = (PluginData *) getHashData(interp, pluginName,
                                           plugext_hashtablePtr);

    if (pluginData == NULL) {
        returnStructPtr->status = TCL_ERROR;
        goto done;
    }

    returnStructPtr->object = Tcl_NewStringObj("NOT IMPLEMENTED YET", -1);
    returnStructPtr->status = TCL_ERROR;

done:

    MyPrint("Leaving loadCmd \n"); fflush(stdout);

```

```
    return returnStructPtr;  
}
```

```

/*
 * plugextInt.h --
 *
 *      Declarations used by the plugexttcl extension
 *
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 * redistribution of this file, and for a
 * DISCLAIMER OF ALL WARRANTIES.
 *
 * RCS: $Log:
 */

#ifndef _PLUGEXTINT
#define _PLUGEXTINT

/*
 * Declare the #includes that will be used by this extension
 */

#include "extensionLib.h"

/* typedef struct Tcl_Obj Tcl_Obj; */

#ifdef __cplusplus
extern "C" {
#endif

#include "tcl805.h"

#ifdef __cplusplus
}
#endif

#include <string.h>
#include "npupp.h"
#include "npapi.h"
/* #include <sys/utsname.h> */
/* #include <iostream.h> */

/*
 * Define the major and minor version numbers.
 * Note: VERSION is defined as a string, not integers.
 *        MAJOR and MINOR are defined as integers.
 */
#define PLUGEXT_VERSION "1.0"
#define PLUGEXT_MAJOR_VERSION 1
#define PLUGEXT_MINOR_VERSION 0

/* MAY BE UNNECESSARY - APPEARS IN DOCUMENTATION, but NOT npapi.h */

#define NP_BACKGROUND 3

typedef struct pluginData {

```

```

#if defined (_WIN32)
    HINSTANCE dlopenHandle;
#else
    void *dlopenHandle;
#endif
    NPNetScapeFuncs netscapeFuncs;
    NPPPluginFuncs pluginFuncs;
    Tcl_Obj *childList;
    char *DLLname;           /* The name of this plugin (xx.dll/xx.so) */
#if defined (_WIN32)
    void *VersionData;      /* To be queried as necessary */
#endif
} PluginData;

typedef struct instanceData {
    NPNetScapeFuncs *netscapeFuncs;
    NPPPluginFuncs *pluginFuncs;
    NPStream *pluginReadStream;
    NPStream *pluginWriteStream;
    NPP handle;
    NPWindow *win;
    NPSavedData *saved;
    char *streamType;        /* asfile, normal, asfileonly */
    Tcl_Channel tclReadChannel;
    Tcl_Channel tclPutsChannel;
    unsigned char *readBuffer;
    unsigned char *putsBuffer;
    int readLen;             /* How much data is in readBuffer */
    int readOffset;          /* Where does it start */
    int readSize;             /* How much space is there */
    int maxAccept;           /* The first WriteReady return */
    Tcl_Interp *interp;      /* For use by the I/O routines */
} InstanceData;

/*
 * VC++ has an alternate entry point called DllMain, so we
 * need to rename our entry point.
 */

#if defined(__WIN32__)
# define WIN32_LEAN_AND_MEAN
# include <windows.h>
# undef WIN32_LEAN_AND_MEAN
# if defined(_MSC_VER)
#     define EXPORT(a,b) __declspec(dllexport) a b
#     define DllEntryPoint DllMain
# else
#     if defined(__BORLANDC__)
#         define EXPORT(a,b) a __export b
#     else
#         define EXPORT(a,b) a b
#     endif
# endif
# else
#     define EXPORT(a,b) a b
#endif

```

```

/*
 * Function Prototypes for the commands that actually do the
 * processing.
 * Two macros are used in these prototypes:
 *
 * EXTERN EXPORT is for functions that must interact with the
 * Microsoft or Borland C++ DLL loader.
 * ANSI_ARGS is defined in tcl.h
 * ANSI_ARGS returns an empty string for non-ANSI C
 * compilers, and returns it's arguments for ANSI C
 * compilers.
 */

/****
extern "C" {
****/
*****  

// EXTERN EXPORT(int,plugext_AppInit) _ANSI_ARGS_ ((Tcl_Interp *));
// EXTERN EXPORT(int,plugext_Init) _ANSI_ARGS_ ((Tcl_Interp *));
// EXTERN EXPORT(int,plugext_Cmd) _ANSI_ARGS_ ((ClientData, Tcl_Interp *, int,
Tcl_Obj **));
*****/  

  

int plugext_AppInit _ANSI_ARGS_ ((Tcl_Interp *));
int plugext_Init _ANSI_ARGS_ ((Tcl_Interp *));
int plugext_Cmd _ANSI_ARGS_ ((ClientData, Tcl_Interp *, int, Tcl_Obj **));  

  

/****
}
****/  

  

int plugext_loadInit _ANSI_ARGS_ ((Tcl_Interp *, char *));
  

int plugextName_Cmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
  

int plugInst_Cmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
  

CmdReturn *plugext_createCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
  

  

CmdReturn *plugextName_newCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugextName_destroyCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugextName_childrenCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugextName_getmimeCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
  

  

CmdReturn *plugInst_openCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));

```

```

CmdReturn *plugInst_destroyCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugInst_closeCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugInst_setwindowCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugInst_writereadyCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugInst_streamfileCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugInst_streamTypeCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));

Tcl_ChannelType *makeChannelTypeStructure();

CmdReturn *plugext_ArraystrCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
CmdReturn *plugext_GetstrCmd _ANSI_ARGS_ ((ClientData,
    Tcl_Interp *, int, Tcl_Obj **));
void plugext_InitHashTable _ANSI_ARGS_ (());

/*
 * For debugging printf's.
 */

#define debugprt if (plugextDebugPrint>0) printf
#endif
/* End _PLUGEXTINT */

```

```

/*
 * plugextCmd.c --
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 * PROVIDE MAINTENANCE, SUPPORT, UPDATES, ENHANCEMENTS, OR MODIFICATIONS.
 */
/* Include the usual suspects. */

#ifndef _WIN32
#include <windows.h>
#endif
#include "stdlib.h"
#include "ctype.h"
#include "plugextInt.h"

#define plugInst_REVISION "$Revision: 1.5 $"

extern int plugextDebugPrint;

/*
 * Define the sub commands
 *
 * These strings define the subcommands that the plugext command
 * supports.
 *
 * To add a new subcommand, add the new subcommand string,
 * #define and entry in cmdDefinition
 *
 * Note: Order is important.
 *
 * These are the subcommands that will be recognized
 */
static char *subcommands[] = {
    "open", "destroy", "close", "setwindow", "writeready", "streamfile",
    "streamtype", "sendFile", "bogus", NULL};

/*
 * These #defines define the positions of the subcommands.
 * You can use enums if you are certain your compiler will provide the

```

```

* same numbers as this.
*/
#define M_open 0
#define M_destroy 1
#define M_close 2
#define M_setwindow 3
#define M_writeready 4
#define M_streamfile 5
#define M_streamtype 6
#define M_sendFile 7
#define M_bogus 8

/*
 * The cmdDefinition structure describes the minimum and maximum number
 * of expected arguments for the subcommand (including cmd and subcommand
 * names), and a usage message to return if the argument
 * count is outside the expected range.
*/
static cmdDefinition definitions[] = {
    {"open ?-mime Mimetype? -seekable ?FULL, EMBED, BACKGROUND? 'r/w'", 3 , 7},
    {"destroy ", 2 , 2},
    {"close channelID", 3 , 3},
    {"setwindow windowName", 3 , 3},
    {"writeready channel", 3 , 3},
    {"streamfile fileName", 3 , 3},
    {"streamtype", 2 , 2},
    {"sendFile fileName", 3 , 3},
    {"bogus bogusval", 3, 3}
};

/*
----- C++ Comment
// These are the segments that need to be declared in the "C" namespace
// These function names and data will be accessed by programs in the
//   Tcl "C" language library.
*/
/*
extern "C" {

/*
-----
*
* plugInst_Cmd --
*
*     plugextName_Cmd is invoked to process the "pluginName" Tcl command.
*     It will parse a subcommand, and perform the requested action.
*
* Results:
*     A standard Tcl result.
*
* Side effects:
*
-----
*/

```

```

int plugInst_Cmd(ClientData plugext,
                  Tcl_Interp *interp,
                  int objc,
                  Tcl_Obj *objv[]) {

    /* ClientData plugext;           /* Not used. */
    /* Tcl_Interp *interp;          /* Current interpreter. */
    /* int objc;                   /* Number of arguments. */
    /* Tcl_Obj *CONST objv[];       /* Argument objects. */

    int cmdnum;
    int result;
    Tcl_Obj *returnValue;
    CmdReturn *returnStruct;

    /*
     * Initialize the return value
     */

    returnValue = NULL;
    returnStruct = NULL;

    /*
     * Check that we have at least a subcommand,
     * else return an Error and the usage message
     */
    if (objc < 2) {
        Tcl_WrongNumArgs(interp, 1, objv,
                          "subcommand ?fieldName? ?fieldValue?");
        return TCL_ERROR;
    }

    /*
     * Find this plugext subcommand in the list of subcommands.
     * Tcl_GetIndexFromObj returns the offset of the recognized string,
     * which is used to index into the command definitions table.
     */
    result = Tcl_GetIndexFromObj(interp, objv[1], subcommands,
                                 "subcommand", TCL_EXACT, &cmdnum);

    /*
     * If the result is not TCL_OK, then the error message is already
     * in the Tcl Interpreter, this code can immediately return.
     */
    if (result != TCL_OK) {
        return TCL_ERROR;
    }

    /*
     * Check that the argument count matches what's expected for this
     * Subcommand.
     */
}

```

```

if ((objc < definitions[cmdnum].minArgCnt) ||
    (objc > definitions[cmdnum].maxArgCnt) ) {
    Tcl_WrongNumArgs(interp, 1, objv, definitions[cmdnum].usage);
    return TCL_ERROR;
}

result = TCL_OK;

/*
 * The subcommand is recognized, and has a valid number of arguments
 * Process the command.
 */

switch (cmdnum) {
    case M_open:   {
        returnStruct =
            plugInst_openCmd(NULL, interp, objc, objv);
        break;
    }
    case M_destroy: {
        returnStruct =
            plugInst_destroyCmd(NULL, interp, objc, objv);
        break;
    }
    case M_close:   {
        returnStruct =
            plugInst_closeCmd(NULL, interp, objc, objv);
        break;
    }
    case M_setwindow: {
        returnStruct =
            plugInst_setwindowCmd(NULL, interp, objc, objv);
        break;
    }
    case M_writeready: {
        returnStruct =
            plugInst_writereadyCmd(NULL, interp, objc, objv);
        break;
    }
    case M_streamfile: {
        returnStruct =
            plugInst_streamfileCmd(NULL, interp, objc, objv);
        break;
    }
    case M_streamtype: {
        returnStruct =
            plugInst_streamTypeCmd(NULL, interp, objc, objv);
        break;
    }
    case M_sendFile: {
        returnStruct =
            plugInst_sendFileCmd(NULL, interp, objc, objv);
        break;
    }
    default:          {
        char error[80];

```

```

        sprintf(error, "Bad sub-command %s.  Has no entry in switch",
            TclGetStringFromObj(objv[1], NULL));
        returnValue = Tcl_NewStringObj(error, -1);
        result = TCL_ERROR;
    }
}

/*
 * Extract an object to return from returnStruct.
 * returnStruct will be NULL if the processing is done in this
 * function and no other function is called.
*/
if (returnStruct != NULL) {
    returnValue = returnStruct->object;
    result = returnStruct->status;
    Tcl_Free ((char *)returnStruct);
}

/*
 * Set the return value and return the status
*/
if (returnValue != NULL) {
    Tcl_SetObjResult(interp, returnValue);
}

debugprt("leaving plugextInst Cmd\n");
fflush(stdout);

return result;
}
/* ----- C++ Comment
// This is the close of the extern "C" section
*/
/*
}
*/

```

```

/*
 * tcl.h --
 *
 *      This header file describes the externally-visible facilities
 *      of the Tcl interpreter.
 *
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 *
 * RCS: @(#) $Id: tcl805.h,v 1.1 1999/08/01 14:58:49 clif Exp $
 */

#ifndef _TCL
#define _TCL

/*
 * When version numbers change here, must also go into the following files
 * and update the version numbers:
 *
 * README
 * library/init.tcl      (only if major.minor changes, not patchlevel)
 * unix/configure.in
 * win/makefile.bc        (only if major.minor changes, not patchlevel)
 * win/makefile.vc        (only if major.minor changes, not patchlevel)
 * win/README
 * win/README.binary
 * mac/README
 *
 * The release level should be 0 for alpha, 1 for beta, and 2 for
 * final/patch. The release serial value is the number that follows the
 * "a", "b", or "p" in the patch level; for example, if the patch level
 * is 7.6b2, TCL_RELEASE_SERIAL is 2. It restarts at 1 whenever the
 * release level is changed, except for the final release which is 0
 * (the first patch will start at 1).
 */
#define TCL_MAJOR_VERSION     8
#define TCL_MINOR_VERSION    0
#define TCL_RELEASE_LEVEL    2
#define TCL_RELEASE_SERIAL   5

#define TCL_VERSION          "8.0"
#define TCL_PATCH_LEVEL      "8.0.5"

/*
 * The following definitions set up the proper options for Windows
 * compilers. We use this method because there is no autoconf equivalent.
 */
#ifndef __WIN32__
#  if defined(_WIN32) || defined(WIN32)
#    define __WIN32__

```

```

# endif
#endif

#ifndef __WIN32__
# ifndef STRICT
#  define STRICT
# endif
# ifndef USE_PROTO
#  define USE_PROTO 1
# endif
# ifndef HAS_STDARG
#  define HAS_STDARG 1
# endif
# ifndef USE_PROTO
#  define USE_PROTO 1
# endif
#endif

/*
 * Under Windows we need to call Tcl_Alloc in all cases to avoid competing
 * C run-time library issues.
 */

#ifndef USE_TCLALLOC
# define USE_TCLALLOC 1
#endif
#endif /* __WIN32__ */

/*
 * The following definitions set up the proper options for Macintosh
 * compilers. We use this method because there is no autoconf equivalent.
 */

#ifndef MAC_TCL
# ifndef HAS_STDARG
#  define HAS_STDARG 1
# endif
# ifndef USE_TCLALLOC
#  define USE_TCLALLOC 1
# endif
# ifndef NO_STRERROR
#  define NO_STRERROR 1
# endif
#endif

/*
 * Utility macros: STRINGIFY takes an argument and wraps it in "" (double
 * quotation marks), JOIN joins two arguments.
 */

#define VERBATIM(x) x
#ifndef _MSC_VER
# define STRINGIFY(x) STRINGIFY1(x)
# define STRINGIFY1(x) #x
# define JOIN(a,b) JOIN1(a,b)
# define JOIN1(a,b) a##b
#else
# ifdef RESOURCE_INCLUDED

```

```

# define STRINGIFY(x) STRINGIFY1(x)
# define STRINGIFY1(x) #x
# define JOIN(a,b) JOIN1(a,b)
# define JOIN1(a,b) a##b
# else
# ifdef __STDC__
#   define STRINGIFY(x) #x
#   define JOIN(a,b) a##b
# else
#   define STRINGIFY(x) "x"
#   define JOIN(a,b) VERBATIM(a)VERBATIM(b)
# endif
# endif
#endif

/*
 * A special definition used to allow this header file to be included
 * in resource files so that they can get obtain version information from
 * this file. Resource compilers don't like all the C stuff, like typedefs
 * and procedure declarations, that occur below.
 */

#ifndef RESOURCE_INCLUDED

#ifndef BUFSIZ
#include <stdio.h>
#endif

/*
 * Definitions that allow Tcl functions with variable numbers of
 * arguments to be used with either varargs.h or stdarg.h. TCL_VARARGS
 * is used in procedure prototypes. TCL_VARARGS_DEF is used to declare
 * the arguments in a function definiton: it takes the type and name of
 * the first argument and supplies the appropriate argument declaration
 * string for use in the function definition. TCL_VARARGS_START
 * initializes the va_list data structure and returns the first argument.
 */
#endif

#if defined(__STDC__) || defined(HAS_STDARG)
# define TCL_VARARGS(type, name) (type name, ...)
# define TCL_VARARGS_DEF(type, name) (type name, ...)
# define TCL_VARARGS_START(type, name, list) (va_start(list, name), name)
#else
# ifdef __cplusplus
#   define TCL_VARARGS(type, name) (type name, ...)
#   define TCL_VARARGS_DEF(type, name) (type va_alist, ...)
# else
#   define TCL_VARARGS(type, name) ()
#   define TCL_VARARGS_DEF(type, name) (va_alist)
# endif
# define TCL_VARARGS_START(type, name, list) \
    (va_start(list), va_arg(list, type))
#endif

/*
 * Macros used to declare a function to be exported by a DLL.
 * Used by Windows, maps to no-op declarations on non-Windows systems.

```

```

* The default build on windows is for a DLL, which causes the DLLIMPORT
* and DLLEXPORT macros to be nonempty. To build a static library, the
* macro STATIC_BUILD should be defined.
* The support follows the convention that a macro called BUILD_xxxx, where
* xxxx is the name of a library we are building, is set on the compile line
* for sources that are to be placed in the library. See BUILD_tcl in this
* file for an example of how the macro is to be used.
*/
#endif _WIN32_
#ifndef STATIC_BUILD
#define DLLIMPORT
#define DLLEXPORT
#else
# if defined(_MSC_VER) || (defined(__GNUC__) && defined(__declspec__))
# define DLLIMPORT __declspec(dllexport)
# define DLLEXPORT __declspec(dllexport)
#else
# define DLLIMPORT
# define DLLEXPORT
#endif
#endif
#define endif
#define else
#define define
#define undef
#define TCL_STORAGE_CLASS
#define undef
#define endif
#define BUILD_tcl
#define define TCL_STORAGE_CLASS DLLEXPORT
#define else
#define define TCL_STORAGE_CLASS DLLIMPORT
#endif

/*
 * Definitions that allow this header file to be used either with or
 * without ANSI C features like function prototypes.
*/
#undef _ANSI_ARGS_
#undef CONST

#if ((defined(__STDC__) || defined(SABER)) && !defined(NO_PROTO)) ||
defined(__cplusplus) || defined(USE_PROTO)
#define USING_PROTOTYPES_ 1
#define _ANSI_ARGS_(x)      x
#define CONST const
#else
#define _ANSI_ARGS_(x)      ()
#define CONST
#endif

#ifdefined __cplusplus
#define EXTERN extern "C" TCL_STORAGE_CLASS
#else

```

```

# define EXTERN extern TCL_STORAGE_CLASS
#endif

/*
 * Macro to use instead of "void" for arguments that must have
 * type "void *" in ANSI C;  maps them to type "char *" in
 * non-ANSI systems.
 */
#ifndef __WIN32__
#ifndef VOID
#define _STDC_
#define VOID void
#else
#define VOID char
#endif
#endif
#ifndef /* __WIN32__ */
/* The following code is copied from winnt.h
 */
#ifndef VOID
#define VOID void
typedef char CHAR;
typedef short SHORT;
typedef long LONG;
#endif
#endif /* __WIN32__ */

/*
 * Miscellaneous declarations.
 */
#ifndef NULL
#define NULL 0
#endif

#ifndef _CLIENTDATA
#if defined(__STDC__) || defined(__cplusplus)
typedef void *ClientData;
#else
typedef int *ClientData;
#endif /* __STDC__ */
#define _CLIENTDATA
#endif

/*
 * Data structures defined opaquely in this module. The definitions below
 * just provide dummy types. A few fields are made visible in Tcl_Interp
 * structures, namely those used for returning a string result from
 * commands. Direct access to the result field is discouraged in Tcl 8.0.
 * The interpreter result is either an object or a string, and the two
 * values are kept consistent unless some C code sets interp->result
 * directly. Programmers should use either the procedure Tcl_GetObjResult()
 * or TclGetStringResult() to read the interpreter's result. See the
 * SetResult man page for details.
 *
 * Note: any change to the Tcl_Interp definition below must be mirrored

```

```

* in the "real" definition in tclInt.h.
*
* Note: Tcl_ObjCmdProc procedures do not directly set result and freeProc.
* Instead, they set a Tcl_Obj member in the "real" structure that can be
* accessed with Tcl_GetObjResult() and Tcl_SetObjResult().
*/

```

```

typedef struct Tcl_Interp {
    char *result;          /* If the last command returned a string
                           * result, this points to it. */
    void (*freeProc) _ANSI_ARGS_((char *blockPtr));
                           /* Zero means the string result is
                           * statically allocated. TCL_DYNAMIC means
                           * it was allocated with ckalloc and should
                           * be freed with ckfree. Other values give
                           * the address of procedure to invoke to
                           * free the result. Tcl_Eval must free it
                           * before executing next command. */
    int errorLine;         /* When TCL_ERROR is returned, this gives
                           * the line number within the command where
                           * the error occurred (1 if first line). */
} Tcl_Interp;

```

```

typedef struct Tcl_AsyncHandler_ *Tcl_AsyncHandler;
typedef struct Tcl_Channel_ *Tcl_Channel;
typedef struct Tcl_Command_ *Tcl_Command;
typedef struct Tcl_Event Tcl_Event;
typedef struct Tcl_Pid_ *Tcl_Pid;
typedef struct Tcl_RegExp_ *Tcl_RegExp;
typedef struct Tcl_TimerToken_ *Tcl_TimerToken;
typedef struct Tcl_Trace_ *Tcl_Trace;
typedef struct Tcl_Var_ *Tcl_Var;

```

```

/*
* When a TCL command returns, the interpreter contains a result from the
* command. Programmers are strongly encouraged to use one of the
* procedures Tcl_GetObjResult() or Tcl_GetStringResult() to read the
* interpreter's result. See the SetResult man page for details. Besides
* this result, the command procedure returns an integer code, which is
* one of the following:
*
* TCL_OK      Command completed normally; the interpreter's
*             result contains the command's result.
* TCL_ERROR   The command couldn't be completed successfully;
*             the interpreter's result describes what went wrong.
* TCL_RETURN  The command requests that the current procedure
*             return; the interpreter's result contains the
*             procedure's return value.
* TCL_BREAK   The command requests that the innermost loop
*             be exited; the interpreter's result is meaningless.
* TCL_CONTINUE Go on to the next iteration of the current loop;
*               the interpreter's result is meaningless.
*/

```

```

#define TCL_OK      0
#define TCL_ERROR  1
#define TCL_RETURN 2

```

```

#define TCL_BREAK 3
#define TCL_CONTINUE 4

#define TCL_RESULT_SIZE 200

/*
 * Argument descriptors for math function callbacks in expressions:
 */

typedef enum {TCL_INT, TCL_DOUBLE, TCL EITHER} Tcl_ValueType;
typedef struct Tcl_Value {
    Tcl_ValueType type;           /* Indicates intValue or doubleValue is
                                    * valid, or both. */
    long intValue;               /* Integer value. */
    double doubleValue;          /* Double-precision floating value. */
} Tcl_Value;

/*
 * Forward declaration of Tcl_Obj to prevent an error when the forward
 * reference to Tcl_Obj is encountered in the procedure types declared
 * below.
 */

struct Tcl_Obj;

/*
 * Procedure types defined by Tcl:
 */

typedef int (Tcl_AppInitProc) _ANSI_ARGS_((Tcl_Interp *interp));
typedef int (Tcl_AsyncProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, int code));
typedef void (Tcl_ChannelProc) _ANSI_ARGS_((ClientData clientData, int mask));
typedef void (Tcl_CloseProc) _ANSI_ARGS_((ClientData data));
typedef void (Tcl_CmdDeleteProc) _ANSI_ARGS_((ClientData clientData));
typedef int (Tcl_CmdProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, int argc, char *argv[]));
typedef void (Tcl_CmdTraceProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, int level, char *command, Tcl_CmdProc *proc,
    ClientData cmdClientData, int argc, char *argv[]));
typedef void (Tcl_DupInternalRepProc) _ANSI_ARGS_((struct Tcl_Obj *srcPtr,
    struct Tcl_Obj *dupPtr));
typedef int (Tcl_EventProc) _ANSI_ARGS_((Tcl_Event *evPtr, int flags));
typedef void (Tcl_EventCheckProc) _ANSI_ARGS_((ClientData clientData,
    int flags));
typedef int (Tcl_EventDeleteProc) _ANSI_ARGS_((Tcl_Event *evPtr,
    ClientData clientData));
typedef void (Tcl_EventSetupProc) _ANSI_ARGS_((ClientData clientData,
    int flags));
typedef void (Tcl_ExitProc) _ANSI_ARGS_((ClientData clientData));
typedef void (Tcl_FileProc) _ANSI_ARGS_((ClientData clientData, int mask));
typedef void (Tcl_FileFreeProc) _ANSI_ARGS_((ClientData clientData));
typedef void (Tcl_FreeInternalRepProc) _ANSI_ARGS_((struct Tcl_Obj *objPtr));
typedef void (Tcl_FreeProc) _ANSI_ARGS_((char *blockPtr));
typedef void (Tcl_IdleProc) _ANSI_ARGS_((ClientData clientData));
typedef void (Tcl_InterpDeleteProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp));

```

```

typedef int (Tcl_MathProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, Tcl_Value *args, Tcl_Value *resultPtr));
typedef void (Tcl_NamespaceDeleteProc) _ANSI_ARGS_((ClientData clientData));
typedef int (Tcl_ObjCmdProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, int objc, struct Tcl_Obj * CONST objv[]));
typedef int (Tcl_PackageInitProc) _ANSI_ARGS_((Tcl_Interp *interp));
typedef void (Tcl_TcpAcceptProc) _ANSI_ARGS_((ClientData callbackData,
    Tcl_Channel chan, char *address, int port));
typedef void (Tcl_TimerProc) _ANSI_ARGS_((ClientData clientData));
typedef int (Tcl_SetFromAnyProc) _ANSI_ARGS_((Tcl_Interp *interp,
    struct Tcl_Obj *objPtr));
typedef void (Tcl_UpdateStringProc) _ANSI_ARGS_((struct Tcl_Obj *objPtr));
typedef char *(Tcl_VarTraceProc) _ANSI_ARGS_((ClientData clientData,
    Tcl_Interp *interp, char *part1, char *part2, int flags));

/*
 * The following structure represents a type of object, which is a
 * particular internal representation for an object plus a set of
 * procedures that provide standard operations on objects of that type.
 */

typedef struct Tcl_ObjType {
    char *name;                      /* Name of the type, e.g. "int". */
    Tcl_FreeInternalRepProc *freeIntRepProc;
        /* Called to free any storage for the type's
         * internal rep. NULL if the internal rep
         * does not need freeing. */
    Tcl_DupInternalRepProc *dupIntRepProc;
        /* Called to create a new object as a copy
         * of an existing object. */
    Tcl_UpdateStringProc *updateStringProc;
        /* Called to update the string rep from the
         * type's internal representation. */
    Tcl_SetFromAnyProc *setFromAnyProc;
        /* Called to convert the object's internal
         * rep to this type. Frees the internal rep
         * of the old type. Returns TCL_ERROR on
         * failure. */
} Tcl_ObjType;

/*
 * One of the following structures exists for each object in the Tcl
 * system. An object stores a value as either a string, some internal
 * representation, or both.
 */

typedef struct Tcl_Obj {
    int refCount;                  /* When 0 the object will be freed. */
    char *bytes;                   /* This points to the first byte of the
                                    * object's string representation. The array
                                    * must be followed by a null byte (i.e., at
                                    * offset length) but may also contain
                                    * embedded null characters. The array's
                                    * storage is allocated by ckalloc. NULL
                                    * means the string rep is invalid and must
                                    * be regenerated from the internal rep.
                                    * Clients should use TclGetStringFromObj

```

```

        * to get a pointer to the byte array as a
        * readonly value. */
int length;           /* The number of bytes at *bytes, not
                           * including the terminating null. */
Tcl_ObjType *typePtr; /* Denotes the object's type. Always
                      * corresponds to the type of the object's
                      * internal rep. NULL indicates the object
                      * has no internal rep (has no type). */
union {               /* The internal representation: */
    long longValue;   /* - an long integer value */
    double doubleValue; /* - a double-precision floating value */
    VOID *otherValuePtr; /* - another, type-specific value */
    struct {          /* - internal rep as two pointers */
        VOID *ptr1;
        VOID *ptr2;
    } twoPtrValue;
} internalRep;
} Tcl_Obj;

/*
 * Macros to increment and decrement a Tcl_Obj's reference count, and to
 * test whether an object is shared (i.e. has reference count > 1).
 * Note: clients should use Tcl_DecrRefCount() when they are finished using
 * an object, and should never call TclFreeObj() directly. TclFreeObj() is
 * only defined and made public in tcl.h to support Tcl_DecrRefCount's macro
 * definition. Note also that Tcl_DecrRefCount() refers to the parameter
 * "obj" twice. This means that you should avoid calling it with an
 * expression that is expensive to compute or has side effects.
*/
EXTERN void      Tcl_IncrRefCount _ANSI_ARGS_((Tcl_Obj *objPtr));
EXTERN void      Tcl_DecrRefCount _ANSI_ARGS_((Tcl_Obj *objPtr));
EXTERN int       Tcl_IsShared _ANSI_ARGS_((Tcl_Obj *objPtr));

#ifndef TCL_MEM_DEBUG
# define Tcl_IncrRefCount(objPtr) \
    Tcl_DbIncrRefCount(objPtr, __FILE__, __LINE__)
# define Tcl_DecrRefCount(objPtr) \
    Tcl_DbDecrRefCount(objPtr, __FILE__, __LINE__)
# define Tcl_IsShared(objPtr) \
    Tcl_DbIsShared(objPtr, __FILE__, __LINE__)
#else
# define Tcl_IncrRefCount(objPtr) \
    ++(objPtr)->refCount
# define Tcl_DecrRefCount(objPtr) \
    if (--(objPtr)->refCount <= 0) TclFreeObj(objPtr)
# define Tcl_IsShared(objPtr) \
    ((objPtr)->refCount > 1)
#endif

/*
 * Macros and definitions that help to debug the use of Tcl objects.
 * When TCL_MEM_DEBUG is defined, the Tcl_New* declarations are
 * overridden to call debugging versions of the object creation procedures.
*/
EXTERN Tcl_Obj *  Tcl_NewBooleanObj _ANSI_ARGS_((int boolValue));

```

```

EXTERN Tcl_Obj * Tcl_NewDoubleObj _ANSI_ARGS_((double doubleValue));
EXTERN Tcl_Obj * Tcl_NewIntObj _ANSI_ARGS_((int intValue));
EXTERN Tcl_Obj * Tcl_NewListObj _ANSI_ARGS_((int objc,
                                             Tcl_Obj *CONST objv[]));
EXTERN Tcl_Obj * Tcl_NewLongObj _ANSI_ARGS_((long longValue));
EXTERN Tcl_Obj * Tcl_NewObj _ANSI_ARGS_((void));
EXTERN Tcl_Obj * Tcl_NewStringObj _ANSI_ARGS_((char *bytes,
                                              int length));

#ifndef TCL_MEM_DEBUG
# define Tcl_NewBooleanObj(val) \
    Tcl_DbNewBooleanObj(val, __FILE__, __LINE__)
# define Tcl_NewDoubleObj(val) \
    Tcl_DbNewDoubleObj(val, __FILE__, __LINE__)
# define Tcl_NewIntObj(val) \
    Tcl_DbNewLongObj(val, __FILE__, __LINE__)
# define Tcl_NewListObj(objc, objv) \
    Tcl_DbNewListObj(objc, objv, __FILE__, __LINE__)
# define Tcl_NewLongObj(val) \
    Tcl_DbNewLongObj(val, __FILE__, __LINE__)
# define Tcl_NewObj() \
    Tcl_DbNewObj(__FILE__, __LINE__)
# define Tcl_NewStringObj(bytes, len) \
    Tcl_DbNewStringObj(bytes, len, __FILE__, __LINE__)
#endif /* TCL_MEM_DEBUG */

/*
 * The following definitions support Tcl's namespace facility.
 * Note: the first five fields must match exactly the fields in a
 * Namespace structure (see tcl.h).
 */

typedef struct Tcl_Namespace {
    char *name;                      /* The namespace's name within its parent
                                         * namespace. This contains no ::'s. The
                                         * name of the global namespace is ""
                                         * although ":" is an synonym. */
    char *fullName;                  /* The namespace's fully qualified name.
                                         * This starts with ::.. */
    ClientData clientData;           /* Arbitrary value associated with this
                                         * namespace. */
    Tcl_NamespaceDeleteProc* deleteProc;
                                         /* Procedure invoked when deleting the
                                         * namespace to, e.g., free clientData. */
    struct Tcl_Namespace* parentPtr;
                                         /* Points to the namespace that contains
                                         * this one. NULL if this is the global
                                         * namespace. */
} Tcl_Namespace;

/*
 * The following structure represents a call frame, or activation record.
 * A call frame defines a naming context for a procedure call: its local
 * scope (for local variables) and its namespace scope (used for non-local
 * variables; often the global :: namespace). A call frame can also define
 * the naming context for a namespace eval or namespace inscope command:
 * the namespace in which the command's code should execute. The

```

```

* Tcl_CallFrame structures exist only while procedures or namespace
* eval/inscope's are being executed, and provide a Tcl call stack.
*
* A call frame is initialized and pushed using Tcl_PushCallFrame and
* popped using Tcl_PopCallFrame. Storage for a Tcl_CallFrame must be
* provided by the Tcl_PushCallFrame caller, and callers typically allocate
* them on the C call stack for efficiency. For this reason, Tcl_CallFrame
* is defined as a structure and not as an opaque token. However, most
* Tcl_CallFrame fields are hidden since applications should not access
* them directly; others are declared as "dummyX".
*
* WARNING!! The structure definition must be kept consistent with the
* CallFrame structure in tclInt.h. If you change one, change the other.
*/

```

```

typedef struct Tcl_CallFrame {
    Tcl_Namespace *nsPtr;
    int dummy1;
    int dummy2;
    char *dummy3;
    char *dummy4;
    char *dummy5;
    int dummy6;
    char *dummy7;
    char *dummy8;
    int dummy9;
    char* dummy10;
} Tcl_CallFrame;

```

```

/*
* Information about commands that is returned by Tcl_GetCommandInfo and
* passed to Tcl_SetCommandInfo. objProc is an objc/objv object-based
* command procedure while proc is a traditional Tcl argc/argv
* string-based procedure. Tcl_CreateObjCommand and Tcl_CreateCommand
* ensure that both objProc and proc are non-NULL and can be called to
* execute the command. However, it may be faster to call one instead of
* the other. The member isNativeObjectProc is set to 1 if an
* object-based procedure was registered by Tcl_CreateObjCommand, and to
* 0 if a string-based procedure was registered by Tcl_CreateCommand.
* The other procedure is typically set to a compatibility wrapper that
* does string-to-object or object-to-string argument conversions then
* calls the other procedure.
*/

```

```

typedef struct Tcl_CmdInfo {
    int isNativeObjectProc; /* 1 if objProc was registered by a call to
                           * Tcl_CreateObjCommand; 0 otherwise.
                           * Tcl_SetCmdInfo does not modify this
                           * field. */
    Tcl_ObjCmdProc *objProc; /* Command's object-based procedure. */
    ClientData objClientData; /* ClientData for object proc. */
    Tcl_CmdProc *proc; /* Command's string-based procedure. */
    ClientData clientData; /* ClientData for string proc. */
    Tcl_CmdDeleteProc *deleteProc;
                           /* Procedure to call when command is
                           * deleted. */
    ClientData deleteData; /* Value to pass to deleteProc (usually
                           * NULL). */
}

```

```

        * the same as clientData). */
Tcl_Namespace *namespacePtr; /* Points to the namespace that contains
                           * this command. Note that Tcl_SetCmdInfo
                           * will not change a command's namespace;
                           * use Tcl_RenameCommand to do that. */

} Tcl_CmdInfo;

/*
 * The structure defined below is used to hold dynamic strings. The only
 * field that clients should use is the string field, and they should
 * never modify it.
 */

#define TCL_DSTRING_STATIC_SIZE 200
typedef struct Tcl_DString {
    char *string;           /* Points to beginning of string: either
                           * staticSpace below or a malloced array. */
    int length;             /* Number of non-NUL characters in the
                           * string. */
    int spaceAvl;           /* Total number of bytes available for the
                           * string and its terminating NUL char. */
    char staticSpace[TCL_DSTRING_STATIC_SIZE];
                           /* Space to use in common case where string
                           * is small. */
} Tcl_DString;

#define Tcl_DStringLength(dsPtr) ((dsPtr)->length)
#define Tcl_DStringValue(dsPtr) ((dsPtr)->string)
#define Tcl_DStringTrunc Tcl_DStringSetLength

/*
 * Definitions for the maximum number of digits of precision that may
 * be specified in the "tcl_precision" variable, and the number of
 * characters of buffer space required by Tcl_PrintDouble.
 */

#define TCL_MAX_PREC 17
#define TCL_DOUBLE_SPACE (TCL_MAX_PREC+10)

/*
 * Flag that may be passed to Tcl_ConvertElement to force it not to
 * output braces (careful! if you change this flag be sure to change
 * the definitions at the front of tclUtil.c).
 */

#define TCL_DONT_USE_BRACES 1

/*
 * Flag that may be passed to Tcl_GetIndexFromObj to force it to disallow
 * abbreviated strings.
 */

#define TCL_EXACT 1

/*
 * Flag values passed to Tcl_RecordAndEval.

```

```

* WARNING: these bit choices must not conflict with the bit choices
* for evalFlag bits in tclInt.h!!
*/
#define TCL_NO_EVAL          0x10000
#define TCL_EVAL_GLOBAL       0x20000

/*
 * Special freeProc values that may be passed to Tcl_SetResult (see
 * the man page for details):
 */
#define TCL_VOLATILE    ((Tcl_FreeProc *) 1)
#define TCL_STATIC      ((Tcl_FreeProc *) 0)
#define TCL_DYNAMIC     ((Tcl_FreeProc *) 3)

/*
 * Flag values passed to variable-related procedures.
 */
#define TCL_GLOBAL_ONLY      1
#define TCL_NAMESPACE_ONLY    2
#define TCL_APPEND_VALUE      4
#define TCL_LIST_ELEMENT      8
#define TCL_TRACE_READS      0x10
#define TCL_TRACE_WRITES     0x20
#define TCL_TRACE_UNSETS      0x40
#define TCL_TRACE_DESTROYED   0x80
#define TCL_INTERP_DESTROYED  0x100
#define TCL_LEAVE_ERR_MSG     0x200
#define TCL_PARSE_PART1      0x400

/*
 * Types for linked variables:
 */
#define TCL_LINK_INT          1
#define TCL_LINK_DOUBLE        2
#define TCL_LINK_BOOLEAN        3
#define TCL_LINK_STRING         4
#define TCL_LINK_READ_ONLY      0x80

/*
 * The following declarations either map ckalloc and ckfree to
 * malloc and free, or they map them to procedures with all sorts
 * of debugging hooks defined in tclCkalloc.c.
 */
EXTERN char *      Tcl_Alloc _ANSI_ARGS_((unsigned int size));
EXTERN void        Tcl_Free _ANSI_ARGS_((char *ptr));
EXTERN char *      Tcl_Realloc _ANSI_ARGS_((char *ptr,
                                             unsigned int size));

#ifndef TCL_MEM_DEBUG
# define Tcl_Alloc(x)  Tcl_DbCkalloc(x, __FILE__, __LINE__)
# define Tcl_Free(x)   Tcl_DbCkfree(x, __FILE__, __LINE__)

```



```

ClientData clientData;           /* Application stores something here
                                * with Tcl_SetKeyValue. */
union {
    char *oneWordValue;
    int words[1];
    char string[4];
} key;
} Tcl_HashEntry;

/*
 * Structure definition for a hash table. Must be in tcl.h so clients
 * can allocate space for these structures, but clients should never
 * access any fields in this structure.
 */

#define TCL_SMALL_HASH_TABLE 4
typedef struct Tcl_HashTable {
    Tcl_HashEntry **buckets;      /* Pointer to bucket array. Each
                                * element points to first entry in
                                * bucket's hash chain, or NULL. */
    Tcl_HashEntry *staticBuckets[TCL_SMALL_HASH_TABLE];
    int numBuckets;              /* Bucket array used for small tables
                                * (to avoid mallocs and frees). */
    int numEntries;               /* Total number of buckets allocated
                                * at **bucketPtr. */
    int rebuildSize;              /* Total number of entries present
                                * in table. */
    int downShift;                /* Enlarge table when numEntries gets
                                * to be this large. */
    int mask;                     /* Shift count used in hashing
                                * function. Designed to use high-
                                * order bits of randomized keys. */
    int keyType;                  /* Mask value used in hashing
                                * function. */
    /* Type of keys used in this table.
     * It's either TCL_STRING_KEYS,
     * TCL_ONE_WORD_KEYS, or an integer
     * giving the number of ints that
     * is the size of the key.
     */
    Tcl_HashEntry *(*findProc) _ANSI_ARGS_((struct Tcl_HashTable *tablePtr,
                                              CONST char *key));
    Tcl_HashEntry *(*createProc) _ANSI_ARGS_((struct Tcl_HashTable *tablePtr,
                                              CONST char *key, int *newPtr));
} Tcl_HashTable;

/*
 * Structure definition for information used to keep track of searches
 * through hash tables:
 */
typedef struct Tcl_HashSearch {

```

```

Tcl_HashTable *tablePtr;           /* Table being searched. */
int nextIndex;                   /* Index of next bucket to be
                                 * enumerated after present one. */
Tcl_HashEntry *nextEntryPtr;     /* Next entry to be enumerated in the
                                 * the current bucket. */
} Tcl_HashSearch;

/*
 * Acceptable key types for hash tables:
 */

#define TCL_STRING_KEYS      0
#define TCL_ONE_WORD_KEYS    1

/*
 * Macros for clients to use to access fields of hash entries:
 */

#define Tcl_GetHashValue(h) ((h)->clientData)
#define Tcl_SetHashValue(h, value) ((h)->clientData = (ClientData) (value))
#define Tcl_GetHashKey(tablePtr, h) \
    ((char *) (((tablePtr)->keyType == TCL_ONE_WORD_KEYS) ? (h)-\
    >key.oneWordValue \
        : (h)->key.string))

/*
 * Macros to use for clients to use to invoke find and create procedures
 * for hash tables:
 */

#define Tcl_FindHashEntry(tablePtr, key) \
    (*((tablePtr)->findProc))(tablePtr, key)
#define Tcl_CreateHashEntry(tablePtr, key, newPtr) \
    (*((tablePtr)->createProc))(tablePtr, key, newPtr)

/*
 * Flag values to pass to Tcl_DoOneEvent to disable searches
 * for some kinds of events:
 */

#define TCL_DONT_WAIT          (1<<1)
#define TCL_WINDOW_EVENTS       (1<<2)
#define TCL_FILE_EVENTS         (1<<3)
#define TCL_TIMER_EVENTS        (1<<4)
#define TCL_IDLE_EVENTS         (1<<5)      /* WAS 0x10 ???? */
#define TCL_ALL_EVENTS          (-TCL_DONT_WAIT)

/*
 * The following structure defines a generic event for the Tcl event
 * system. These are the things that are queued in calls to Tcl_QueueEvent
 * and serviced later by Tcl_DoOneEvent. There can be many different
 * kinds of events with different fields, corresponding to window events,
 * timer events, etc. The structure for a particular event consists of
 * a Tcl_Event header followed by additional information specific to that
 * event.
 */

```

```

struct Tcl_Event {
    Tcl_EventProc *proc;      /* Procedure to call to service this event. */
    struct Tcl_Event *nextPtr; /* Next in list of pending events, or NULL.
*/};
/* 
 * Positions to pass to Tcl_QueueEvent:
 */
typedef enum {
    TCL_QUEUE_TAIL, TCL_QUEUE_HEAD, TCL_QUEUE_MARK
} Tcl_QueuePosition;

/*
 * Values to pass to Tcl_SetServiceMode to specify the behavior of notifier
 * event routines.
*/
#define TCL_SERVICE_NONE 0
#define TCL_SERVICE_ALL 1

/*
 * The following structure keeps is used to hold a time value, either as
 * an absolute time (the number of seconds from the epoch) or as an
 * elapsed time. On Unix systems the epoch is Midnight Jan 1, 1970 GMT.
 * On Macintosh systems the epoch is Midnight Jan 1, 1904 GMT.
*/
typedef struct Tcl_Time {
    long sec;                  /* Seconds. */
    long usec;                /* Microseconds. */
} Tcl_Time;

/*
 * Bits to pass to Tcl_CreateFileHandler and Tcl_CreateChannelHandler
 * to indicate what sorts of events are of interest:
*/
#define TCL_READABLE      (1<<1)
#define TCL_WRITABLE      (1<<2)
#define TCL_EXCEPTION     (1<<3)

/*
 * Flag values to pass to Tcl_OpenCommandChannel to indicate the
 * disposition of the stdio handles. TCL_STDIN, TCL STDOUT, TCL STDERR,
 * are also used in Tcl_GetStdChannel.
*/
#define TCL_STDIN         (1<<1)
#define TCL_STDOUT        (1<<2)
#define TCL_STDERR        (1<<3)
#define TCL_ENFORCE_MODE  (1<<4)

/*
 * Typedefs for the various operations in a channel type:
*/

```



```

Tcl_DriverSetOptionProc *setOptionProc;
                           /* Set an option on a channel. */
Tcl_DriverGetOptionProc *getOptionProc;
                           /* Get an option from a channel. */
Tcl_DriverWatchProc *watchProc; /* Set up the notifier to watch
                                * for events on this channel. */
Tcl_DriverGetHandleProc *getHandleProc;
                           /* Get an OS handle from the channel
                                * or NULL if not supported. */
VOID *reserved;           /* reserved for future expansion */
} Tcl_ChannelType;

/*
 * The following flags determine whether the blockModeProc above should
 * set the channel into blocking or nonblocking mode. They are passed
 * as arguments to the blockModeProc procedure in the above structure.
 */

#define TCL_MODE_BLOCKING 0      /* Put channel into blocking mode. */
#define TCL_MODE_NONBLOCKING 1   /* Put channel into nonblocking
                                * mode. */

/*
 * Enum for different types of file paths.
 */

typedef enum Tcl_PathType {
    TCL_PATH_ABSOLUTE,
    TCL_PATH_RELATIVE,
    TCL_PATH_VOLUME_RELATIVE
} Tcl_PathType;

/*
 * Exported Tcl procedures:
 */

EXTERN void      Tcl_AddErrorInfo _ANSI_ARGS_((Tcl_Interp *interp,
                                                char *message));
EXTERN void      Tcl_AddObjErrorInfo _ANSI_ARGS_((Tcl_Interp *interp,
                                                 char *message, int length));
EXTERN void      Tcl_AllowExceptions _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN int       Tcl_AppendAllObjTypes _ANSI_ARGS_(
    Tcl_Interp *interp, Tcl_Obj *objPtr);
EXTERN void      Tcl_AppendElement _ANSI_ARGS_((Tcl_Interp *interp,
                                                char *string));
EXTERN void      Tcl_AppendResult _ANSI_ARGS_(
    TCL_VARARGS(Tcl_Interp *,interp));
EXTERN void      Tcl_AppendToObj _ANSI_ARGS_((Tcl_Obj *objPtr,
                                              char *bytes, int length));
EXTERN void      Tcl_AppendStringsToObj _ANSI_ARGS_(
    TCL_VARARGS(Tcl_Obj *,interp));
EXTERN Tcl_AsyncHandler Tcl_AsyncCreate _ANSI_ARGS_((Tcl_AsyncProc *proc,
                                                    ClientData clientData));
EXTERN void      Tcl_AsyncDelete _ANSI_ARGS_((Tcl_AsyncHandler async));
EXTERN int       Tcl_AsyncInvoke _ANSI_ARGS_((Tcl_Interp *interp,
                                              int code));
EXTERN void      Tcl_AsyncMark _ANSI_ARGS_((Tcl_AsyncHandler async));

```



```

        char *name, int numArgs, Tcl_ValueType *argTypes,
EXTERN Tcl_Command      Tcl_MathProc *proc, ClientData clientData));
        Tcl_CreateObjCommand _ANSI_ARGS_(
EXTERN Tcl_Interp *interp, char *cmdName,
Tcl_ObjCmdProc *proc, ClientData clientData,
Tcl_CmdDeleteProc *deleteProc));
EXTERN Tcl_Interp *      Tcl_CreateSlave _ANSI_ARGS_((Tcl_Interp *interp,
char *slaveName, int isSafe));
EXTERN Tcl_TimerToken    Tcl_CreateTimerHandler _ANSI_ARGS_((int milliseconds,
Tcl_TimerProc *proc, ClientData clientData));
EXTERN Tcl_Trace   Tcl_CreateTrace _ANSI_ARGS_((Tcl_Interp *interp,
int level, Tcl_CmdTraceProc *proc,
ClientData clientData));
EXTERN char *          Tcl_DbCkalloc _ANSI_ARGS_((unsigned int size,
char *file, int line));
EXTERN int              Tcl_DbCkfree _ANSI_ARGS_((char *ptr,
char *file, int line));
EXTERN char *          Tcl_DbCkrealloc _ANSI_ARGS_((char *ptr,
unsigned int size, char *file, int line));
EXTERN void             Tcl_DbDecrRefCount _ANSI_ARGS_((Tcl_Obj *objPtr,
char *file, int line));
EXTERN void             Tcl_DbIncrRefCount _ANSI_ARGS_((Tcl_Obj *objPtr,
char *file, int line));
EXTERN int              Tcl_DbIsShared _ANSI_ARGS_((Tcl_Obj *objPtr,
char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewBooleanObj _ANSI_ARGS_((int boolValue,
char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewDoubleObj _ANSI_ARGS_((double doubleValue,
char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewListObj _ANSI_ARGS_((int objc,
Tcl_Obj *CONST objv[], char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewLongObj _ANSI_ARGS_((long longValue,
char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewObj _ANSI_ARGS_((char *file, int line));
EXTERN Tcl_Obj *         Tcl_DbNewStringObj _ANSI_ARGS_((char *bytes,
int length, char *file, int line));
EXTERN void              Tcl_DeleteAssocData _ANSI_ARGS_((Tcl_Interp *interp,
char *name));
EXTERN int               Tcl_DeleteCommand _ANSI_ARGS_((Tcl_Interp *interp,
char *cmdName));
EXTERN int               Tcl_DeleteCommandFromToken _ANSI_ARGS_(
Tcl_Interp *interp, Tcl_Command command));
EXTERN void              Tcl_DeleteChannelHandler _ANSI_ARGS_(
Tcl_Channel chan, Tcl_ChannelProc *proc,
ClientData clientData));
EXTERN void              Tcl_DeleteCloseHandler _ANSI_ARGS_(
Tcl_Channel chan, Tcl_CloseProc *proc,
ClientData clientData));
EXTERN void              Tcl_DeleteEvents _ANSI_ARGS_(
Tcl_EventDeleteProc *proc,
ClientData clientData));
EXTERN void              Tcl_DeleteEventSource _ANSI_ARGS_(
Tcl_EventSetupProc *setupProc,
Tcl_EventCheckProc *checkProc,
ClientData clientData));
EXTERN void              Tcl_DeleteExitHandler _ANSI_ARGS_((Tcl_ExitProc *proc,
ClientData clientData));

```

```

EXTERN void Tcl_DeleteFileHandler _ANSI_ARGS_((int fd));
EXTERN void Tcl_DeleteHashEntry _ANSI_ARGS_((
    Tcl_HashEntry *entryPtr));
EXTERN void Tcl_DeleteHashTable _ANSI_ARGS_((
    Tcl_HashTable *tablePtr));
EXTERN void Tcl_DeleteInterp _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN void Tcl_DeleteTimerHandler _ANSI_ARGS_((
    Tcl_TimerToken token));
EXTERN void Tcl_DeleteTrace _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Trace trace));
EXTERN void Tcl_DetachPids _ANSI_ARGS_((int numPids, Tcl_Pid *pidPtr));
EXTERN void Tcl_DontCallWhenDeleted _ANSI_ARGS_((
    Tcl_Interp *interp, Tcl_InterpDeleteProc *proc,
    ClientData clientData));
EXTERN int Tcl_DoOneEvent _ANSI_ARGS_((int flags));
EXTERN void Tcl_DoWhenIdle _ANSI_ARGS_((Tcl_IdleProc *proc,
    ClientData clientData));
EXTERN char * Tcl_DStringAppend _ANSI_ARGS_((Tcl_DString *dsPtr,
    CONST char *string, int length));
EXTERN char * Tcl_DStringAppendElement _ANSI_ARGS_((
    Tcl_DString *dsPtr, CONST char *string));
EXTERN void Tcl_DStringEndSublist _ANSI_ARGS_((Tcl_DString *dsPtr));
EXTERN void Tcl_DStringFree _ANSI_ARGS_((Tcl_DString *dsPtr));
EXTERN void Tcl_DStringGetResult _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_DString *dsPtr));
EXTERN void Tcl_DStringInit _ANSI_ARGS_((Tcl_DString *dsPtr));
EXTERN void Tcl_DStringResult _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_DString *dsPtr));
EXTERN void Tcl_DStringSetLength _ANSI_ARGS_((Tcl_DString *dsPtr,
    int length));
EXTERN void Tcl_DStringStartSublist _ANSI_ARGS_((
    Tcl_DString *dsPtr));
EXTERN Tcl_Obj * Tcl_DuplicateObj _ANSI_ARGS_((Tcl_Obj *objPtr));
EXTERN int Tcl_Eof _ANSI_ARGS_((Tcl_Channel chan));
EXTERN char * Tcl_ErrnoId _ANSI_ARGS_((void));
EXTERN char * Tcl_ErrnoMsg _ANSI_ARGS_((int err));
EXTERN void Tcl_Eval _ANSI_ARGS_((Tcl_Interp *interp,
    char *string));
EXTERN void Tcl_EvalFile _ANSI_ARGS_((Tcl_Interp *interp,
    char *fileName));
EXTERN void Tcl_EventuallyFree _ANSI_ARGS_((ClientData clientData,
    Tcl_FreeProc *freeProc));
EXTERN void Tcl_EvalObj _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *objPtr));
EXTERN void Tcl_Exit _ANSI_ARGS_((int status));
EXTERN void Tcl_ExposeCommand _ANSI_ARGS_((Tcl_Interp *interp,
    char *hiddenCmdToken, char *cmdName));
EXTERN void Tcl_ExprBoolean _ANSI_ARGS_((Tcl_Interp *interp,
    char *string, int *ptr));
EXTERN void Tcl_ExprBooleanObj _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *objPtr, int *ptr));
EXTERN void Tcl_ExprDouble _ANSI_ARGS_((Tcl_Interp *interp,
    char *string, double *ptr));
EXTERN void Tcl_ExprDoubleObj _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *objPtr, double *ptr));
EXTERN void Tcl_ExprLong _ANSI_ARGS_((Tcl_Interp *interp,
    char *string, long *ptr));

```



```

EXTERN int          Tcl_GetInt _ANSI_ARGS_((Tcl_Interp *interp,
                                             char *string, int *intPtr));
EXTERN int          Tcl_GetInterpPath _ANSI_ARGS_((Tcl_Interp *askInterp,
                                                 Tcl_Interp *slaveInterp));
EXTERN int          TclGetIntFromObj _ANSI_ARGS_((Tcl_Interp *interp,
                                                 Tcl_Obj *objPtr, int *intPtr));
EXTERN int          TclGetLongFromObj _ANSI_ARGS_((Tcl_Interp *interp,
                                                 Tcl_Obj *objPtr, long *longPtr));
EXTERN Tcl_Interp *  TclGetMaster _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN CONST char *  TclGetNameOfExecutable _ANSI_ARGS_((void));
EXTERN Tcl_Obj *  TclGetObjResult _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN Tcl_ObjType *  TclGetObjType _ANSI_ARGS_((char *typeName));
EXTERN int          TclGetOpenFile _ANSI_ARGS_((Tcl_Interp *interp,
                                                char *string, int write, int checkUsage,
                                                ClientData *filePtr));
EXTERN Tcl_PathType  TclGetPathType _ANSI_ARGS_((char *path));
EXTERN int          TclGets _ANSI_ARGS_((Tcl_Channel chan,
                                         Tcl_DString *dsPtr));
EXTERN int          TclGetsObj _ANSI_ARGS_((Tcl_Channel chan,
                                              Tcl_Obj *objPtr));
EXTERN int          TclGetServiceMode _ANSI_ARGS_((void));
EXTERN Tcl_Interp *  TclGetSlave _ANSI_ARGS_((Tcl_Interp *interp,
                                              char *slaveName));
EXTERN Tcl_Channel   TclGetStdChannel _ANSI_ARGS_((int type));
EXTERN char *        TclGetStringFromObj _ANSI_ARGS_((Tcl_Obj *objPtr,
                                                       int *lengthPtr));
EXTERN char *        TclGetStringResult _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN char *        TclGetVar _ANSI_ARGS_((Tcl_Interp *interp,
                                             char *varName, int flags));
EXTERN char *        TclGetVar2 _ANSI_ARGS_((Tcl_Interp *interp,
                                              char *part1, char *part2, int flags));
EXTERN int          TclGlobalEval _ANSI_ARGS_((Tcl_Interp *interp,
                                               char *command));
EXTERN int          TclGlobalEvalObj _ANSI_ARGS_((Tcl_Interp *interp,
                                                 Tcl_Obj *objPtr));
EXTERN char *        TclHashStats _ANSI_ARGS_((Tcl_HashTable *tablePtr));
EXTERN int          TclHideCommand _ANSI_ARGS_((Tcl_Interp *interp,
                                                char *cmdName, char *hiddenCmdToken));
EXTERN int          TclInit _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN int          TclInitHashTable _ANSI_ARGS_((Tcl_HashTable *tablePtr,
                                                 int keyType));
EXTERN void          TclInitMemory _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN int          TclInputBlocked _ANSI_ARGS_((Tcl_Channel chan));
EXTERN int          TclInputBuffered _ANSI_ARGS_((Tcl_Channel chan));
EXTERN int          TclInterpDeleted _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN int          TclIsSafe _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN void          TclInvalidateStringRep _ANSI_ARGS_(
    Tcl_Obj *objPtr);
EXTERN char *        TclJoinPath _ANSI_ARGS_((int argc, char **argv,
                                              Tcl_DString *resultPtr));
EXTERN int          TclLinkVar _ANSI_ARGS_((Tcl_Interp *interp,
                                             char *varName, char *addr, int type));
EXTERN int          TclListObjAppendList _ANSI_ARGS_(
    Tcl_Interp *interp, Tcl_Obj *listPtr,
    Tcl_Obj *elemListPtr);
EXTERN int          TclListObjAppendElement _ANSI_ARGS_(
    Tcl_Interp *interp, Tcl_Obj *listPtr,

```

```

        Tcl_Obj *objPtr));
EXTERN int     Tcl_ListObjGetElements _ANSI_ARGS_((Tcl_Interp *interp,
                                                Tcl_Obj *listPtr,
                                                int *objcPtr, Tcl_Obj ***objvPtr));
EXTERN int     Tcl_ListObjIndex _ANSI_ARGS_((Tcl_Interp *interp,
                                              Tcl_Obj *listPtr, int index,
                                              Tcl_Obj **objPtrPtr));
EXTERN int     Tcl_ListObjLength _ANSI_ARGS_((Tcl_Interp *interp,
                                              Tcl_Obj *listPtr, int *intPtr));
EXTERN int     Tcl_ListObjReplace _ANSI_ARGS_((Tcl_Interp *interp,
                                              Tcl_Obj *listPtr, int first, int count,
                                              int objc, Tcl_Obj *CONST objv[]));
EXTERN void    Tcl_Main _ANSI_ARGS_((int argc, char **argv,
                                     Tcl_AppInitProc *appInitProc));
EXTERN Tcl_Channel     Tcl_MakeFileChannel _ANSI_ARGS_((ClientData handle,
                                                       int mode));
EXTERN int     Tcl_MakeSafe _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN Tcl_Channel     Tcl_MakeTcpClientChannel _ANSI_ARGS_((ClientData tcpSocket));
EXTERN char *     Tcl_Merge _ANSI_ARGS_((int argc, char **argv));
EXTERN Tcl_HashEntry *  Tcl_NextHashEntry _ANSI_ARGS_((Tcl_HashSearch *searchPtr));
EXTERN void    Tcl_NotifyChannel _ANSI_ARGS_((Tcl_Channel channel,
                                              int mask));
EXTERN Tcl_Obj *   Tcl_ObjGetVar2 _ANSI_ARGS_((Tcl_Interp *interp,
                                              Tcl_Obj *part1Ptr, Tcl_Obj *part2Ptr,
                                              int flags));
EXTERN Tcl_Obj *   Tcl_ObjSetVar2 _ANSI_ARGS_((Tcl_Interp *interp,
                                              Tcl_Obj *part1Ptr, Tcl_Obj *part2Ptr,
                                              Tcl_Obj *newValuePtr, int flags));
EXTERN Tcl_Channel     Tcl_OpenCommandChannel _ANSI_ARGS_((Tcl_Interp *interp,
                                                       int argc, char **argv,
                                                       int flags));
EXTERN Tcl_Channel     Tcl_OpenFileChannel _ANSI_ARGS_((Tcl_Interp *interp,
                                                       char *fileName, char *modeString,
                                                       int permissions));
EXTERN Tcl_Channel     Tcl_OpenTcpClient _ANSI_ARGS_((Tcl_Interp *interp,
                                                       int port, char *address, char *myaddr,
                                                       int myport, int async));
EXTERN Tcl_Channel     Tcl_OpenTcpServer _ANSI_ARGS_((Tcl_Interp *interp,
                                                       int port, char *host,
                                                       Tcl_TcpAcceptProc *acceptProc,
                                                       ClientData callbackData));
EXTERN char *     Tcl_ParseVar _ANSI_ARGS_((Tcl_Interp *interp,
                                             char *string, char **termPtr));
EXTERN int     Tcl_PkgProvide _ANSI_ARGS_((Tcl_Interp *interp,
                                             char *name, char *version));
EXTERN char *     Tcl_PkgRequire _ANSI_ARGS_((Tcl_Interp *interp,
                                              char *name, char *version, int exact));
EXTERN Tcl_PosixError _ANSI_ARGS_((Tcl_Interp *interp));
Tcl_Preserve _ANSI_ARGS_((ClientData data));
Tcl_PrintDouble _ANSI_ARGS_((Tcl_Interp *interp,
                            double value, char *dst));
Tcl_PutEnv _ANSI_ARGS_((CONST char *string));
Tcl_QueueEvent _ANSI_ARGS_((Tcl_Event *evPtr,
                           Tcl_QueuePosition position));
EXTERN int     Tcl_Read _ANSI_ARGS_((Tcl_Channel chan,
                                      int mode));

```

```

        char *bufPtr, int toRead));
EXTERN void Tcl_ReapDetachedProcs _ANSI_ARGS_((void));
EXTERN int Tcl_RecordAndEval _ANSI_ARGS_((Tcl_Interp *interp,
    char *cmd, int flags));
EXTERN int Tcl_RecordAndEvalObj _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *cmdPtr, int flags));
EXTERN Tcl_RegExp Tcl_RegExpCompile _ANSI_ARGS_((Tcl_Interp *interp,
    char *string));
EXTERN int Tcl_RegExpExec _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_RegExp regexp, char *string, char *start));
EXTERN int Tcl_RegExpMatch _ANSI_ARGS_((Tcl_Interp *interp,
    char *string, char *pattern));
EXTERN void Tcl_RegExpRange _ANSI_ARGS_((Tcl_RegExp regexp,
    int index, char **startPtr, char **endPtr));
EXTERN void Tcl_RegisterChannel _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Channel chan));
EXTERN void Tcl_RegisterObjType _ANSI_ARGS_(
    Tcl_ObjType *typePtr);
EXTERN void Tcl_Release _ANSI_ARGS_((ClientData clientData));
EXTERN void Tcl_ResetResult _ANSI_ARGS_((Tcl_Interp *interp));
#define Tcl_Return Tcl_SetResult
EXTERN int Tcl_ScanCountedElement _ANSI_ARGS_((CONST char *string,
    int length, int *flagPtr));
EXTERN int Tcl_ScanElement _ANSI_ARGS_((CONST char *string,
    int *flagPtr));
EXTERN int Tcl_Seek _ANSI_ARGS_((Tcl_Channel chan,
    int offset, int mode));
EXTERN int Tcl_ServiceAll _ANSI_ARGS_((void));
EXTERN int Tcl_ServiceEvent _ANSI_ARGS_((int flags));
EXTERN void Tcl_SetAssocData _ANSI_ARGS_((Tcl_Interp *interp,
    char *name, Tcl_InterpDeleteProc *proc,
    ClientData clientData));
EXTERN void Tcl_SetBooleanObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    int boolValue));
EXTERN void Tcl_SetChannelBufferSize _ANSI_ARGS_(
    Tcl_Channel chan, int sz);
EXTERN int Tcl_SetChannelOption _ANSI_ARGS_(
    Tcl_Interp *interp, Tcl_Channel chan,
    char *optionName, char *newValue));
EXTERN int Tcl_SetCommandInfo _ANSI_ARGS_((Tcl_Interp *interp,
    char *cmdName, Tcl_CmdInfo *infoPtr));
EXTERN void Tcl_SetDoubleObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    double doubleValue));
EXTERN void Tcl_SetErrno _ANSI_ARGS_((int err));
EXTERN void Tcl_SetErrorCode _ANSI_ARGS_(
    TCL_VARARGS(Tcl_Interp *,arg1));
EXTERN void Tcl_SetIntObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    int intValue));
EXTERN void Tcl_SetListObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    int objc, Tcl_Obj *CONST objv[]));
EXTERN void Tcl_SetLongObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    long longValue));
EXTERN void Tcl_SetMaxBlockTime _ANSI_ARGS_((Tcl_Time *timePtr));
EXTERN void Tcl_SetObjErrorCode _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *errorObjPtr));
EXTERN void Tcl_SetObjLength _ANSI_ARGS_((Tcl_Obj *objPtr,
    int length));

```

```

EXTERN void          Tcl_SetObjResult _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Obj *resultObjPtr));
EXTERN void          Tcl_SetPanicProc _ANSI_ARGS_((void (*proc)
    _ANSI_ARGS_(TCL_VARARGS(char *, format)))); 
EXTERN int           Tcl_SetRecursionLimit _ANSI_ARGS_((Tcl_Interp *interp,
    int depth));
EXTERN void          Tcl_SetResult _ANSI_ARGS_((Tcl_Interp *interp,
    char *string, Tcl_FreeProc *freeProc));
EXTERN int           Tcl_SetServiceMode _ANSI_ARGS_((int mode));
EXTERN void          Tcl_SetStdChannel _ANSI_ARGS_((Tcl_Channel channel,
    int type));
EXTERN void          Tcl_SetStringObj _ANSI_ARGS_((Tcl_Obj *objPtr,
    char *bytes, int length));
EXTERN void          Tcl_SetTimer _ANSI_ARGS_((Tcl_Time *timePtr));
    Tcl_SetVar _ANSI_ARGS_((Tcl_Interp *interp,
    char *varName, char *newValue, int flags));
    Tcl_SetVar2 _ANSI_ARGS_((Tcl_Interp *interp,
    char *part1, char *part2, char *newValue,
    int flags));
    Tcl_SignalId _ANSI_ARGS_((int sig));
    Tcl_SignalMsg _ANSI_ARGS_((int sig));
EXTERN void          Tcl_Sleep _ANSI_ARGS_((int ms));
EXTERN void          Tcl_SourceRCFile _ANSI_ARGS_((Tcl_Interp *interp));
EXTERN int           Tcl_SplitList _ANSI_ARGS_((Tcl_Interp *interp,
    char *list, int *argcPtr, char ***argvPtr));
EXTERN void          Tcl_SplitPath _ANSI_ARGS_((char *path,
    int *argcPtr, char ***argvPtr));
EXTERN void          Tcl_StaticPackage _ANSI_ARGS_((Tcl_Interp *interp,
    char *pkgName, Tcl_PackageInitProc *initProc,
    Tcl_PackageInitProc *safeInitProc));
EXTERN int           Tcl_StringMatch _ANSI_ARGS_((char *string,
    char *pattern));
EXTERN int           Tcl_Tell _ANSI_ARGS_((Tcl_Channel chan));
#define Tcl_TildeSubst Tcl_TranslateFileName
EXTERN int           Tcl_TraceVar _ANSI_ARGS_((Tcl_Interp *interp,
    char *varName, int flags, Tcl_VarTraceProc *proc,
    ClientData clientData));
EXTERN int           Tcl_TraceVar2 _ANSI_ARGS_((Tcl_Interp *interp,
    char *part1, char *part2, int flags,
    Tcl_VarTraceProc *proc, ClientData clientData));
    Tcl_TranslateFileName _ANSI_ARGS_((Tcl_Interp *interp,
    char *name, Tcl_DString *bufferPtr));
EXTERN int           Tcl_Ungets _ANSI_ARGS_((Tcl_Channel chan, char *str,
    int len, int atHead));
EXTERN void          Tcl_UnlinkVar _ANSI_ARGS_((Tcl_Interp *interp,
    char *varName));
EXTERN int           Tcl_UnregisterChannel _ANSI_ARGS_((Tcl_Interp *interp,
    Tcl_Channel chan));
EXTERN int           Tcl_UnsetVar _ANSI_ARGS_((Tcl_Interp *interp,
    char *varName, int flags));
EXTERN int           Tcl_UnsetVar2 _ANSI_ARGS_((Tcl_Interp *interp,
    char *part1, char *part2, int flags));
EXTERN void          Tcl_UntraceVar _ANSI_ARGS_((Tcl_Interp *interp,
    char *varName, int flags, Tcl_VarTraceProc *proc,
    ClientData clientData));
EXTERN void          Tcl_UntraceVar2 _ANSI_ARGS_((Tcl_Interp *interp,
    char *part1, char *part2, int flags),

```

```

        Tcl_VarTraceProc *proc, ClientData clientData));
EXTERN void      Tcl_UpdateLinkedVar _ANSI_ARGS_((Tcl_Interp *interp,
                                                char *varName));
EXTERN int       Tcl_UpVar _ANSI_ARGS_((Tcl_Interp *interp,
                                         char *frameName, char *varName,
                                         char *localName, int flags));
EXTERN int       Tcl_UpVar2 _ANSI_ARGS_((Tcl_Interp *interp,
                                         char *frameName, char *part1, char *part2,
                                         char *localName, int flags));
EXTERN int       Tcl_VarEval _ANSI_ARGS_(
    TCL_VARARGS(Tcl_Interp *,interp));
EXTERN ClientData Tcl_VarTraceInfo _ANSI_ARGS_((Tcl_Interp *interp,
                                                 char *varName, int flags,
                                                 Tcl_VarTraceProc *procPtr,
                                                 ClientData prevClientData));
EXTERN ClientData Tcl_VarTraceInfo2 _ANSI_ARGS_((Tcl_Interp *interp,
                                                 char *part1, char *part2, int flags,
                                                 Tcl_VarTraceProc *procPtr,
                                                 ClientData prevClientData));
EXTERN int       Tcl_WaitForEvent _ANSI_ARGS_((Tcl_Time *timePtr));
EXTERN Tcl_Pid   Tcl_WaitPid _ANSI_ARGS_((Tcl_Pid pid, int *statPtr,
                                            int options));
EXTERN int       Tcl_Write _ANSI_ARGS_((Tcl_Channel chan,
                                         char *s, int slen));
EXTERN void      Tcl_WrongNumArgs _ANSI_ARGS_((Tcl_Interp *interp,
                                                int objc, Tcl_Obj *CONST objv[], char *message));

#define TCL_STORAGE_CLASS
#define TCL_STORAGE_CLASS

/*
 * Convenience declaration of Tcl_AppInit for backwards compatibility.
 * This function is not *implemented* by the tcl library, so the storage
 * class is neither DLLEXPORT nor DLLIMPORT
 */
EXTERN int       Tcl_AppInit _ANSI_ARGS_((Tcl_Interp *interp));
#endif /* RESOURCE_INCLUDED */

#define TCL_STORAGE_CLASS
#define TCL_STORAGE_CLASS DLLIMPORT

#endif /* _TCL */

```

```
/*
 * tkWin.h --
 *
 * Declarations of public types and interfaces that are only
 * available under Windows.
 *
 * Copyright (c) 1996 by Sun Microsystems, Inc.
 *
 * See the file "license.terms" for information on usage and redistribution
 * of this file, and for a DISCLAIMER OF ALL WARRANTIES.
 *
 * RCS: @(#) $Id: tkWin.h,v 1.4 1998/09/14 18:23:59 stanton Exp $
 */

#ifndef _TKWIN
#define _TKWIN

#ifndef _TK
#include <tk.h>
#endif

#define WIN32_LEAN_AND_MEAN
#include <windows.h>
#undef WIN32_LEAN_AND_MEAN

#ifdef BUILD_tk
# undef TCL_STORAGE_CLASS
# define TCL_STORAGE_CLASS DLLEXPORT
#endif

/*
 * The following messages are used to communicate between a Tk toplevel
 * and its container window.
 */

#define TK_CLAIMFOCUS    (WM_USER)
#define TK_GEOMETRYREQ   (WM_USER+1)
#define TK_ATTACHWINDOW  (WM_USER+2)
#define TK_DETACHWINDOW  (WM_USER+3)
```

```
/*
*-----*
* Exported procedures defined for the Windows platform only.
*-----*
*/
EXTERN Window      Tk_AttachHWND _ANSI_ARGS_((Tk_Window tkwin,
                                                HWND hwnd));
EXTERN HINSTANCE   Tk_GetHINSTANCE _ANSI_ARGS_((void));
EXTERN HWND         Tk_GetHWND _ANSI_ARGS_((Window window));
EXTERN Tk_Window    Tk_HWNDToWindow _ANSI_ARGS_((HWND hwnd));
EXTERN void         Tk_PointerEvent _ANSI_ARGS_((HWND hwnd,
                                                int x, int y));
EXTERN int          Tk_TranslateWinEvent _ANSI_ARGS_((HWND hwnd,
                                                       UINT message, WPARAM wParam, LPARAM lParam,
                                                       LRESULT *result));

#define TCL_STORAGE_CLASS
#define TCL_STORAGE_CLASS DLLIMPORT

#endif /* _TKWIN */
```

```

/* -- Mode: C; tab-width: 4; -*- */
/*********************************************************/
 * Copyright (c) 1996 Netscape Communications. All rights reserved.
 * Copyright (c) 1997 Lawrence T. Hoff (hoff@bnl.gov). All rights reserved.
/*********************************************************/
/*
 * UnixShell.c
 *
 * Netscape Client Plugin API
 * - Function that need to be implemented by plugin developers
 *
 * This file defines a "Template" plugin that plugin developers can use
 * as the basis for a real plugin. This shell just provides empty
 * implementations of all functions that the plugin can implement
 * that will be called by Netscape (the NPP_xxx methods defined in
 * npapi.h).
 *
 */
#include <stdio.h>                                     /* sprintf(), fprintf(), etc.
/*
#include <sys/types.h>                                 /* pid_t */
#include <unistd.h>                                    /* fork(), system(), unlink(),
etc. */
#include <signal.h>                                    /* SIGHUP */
#include <fcntl.h>                                     /* O_RDWR */
#include <sys/wait.h>                                   /* wait() */
#include "npapi.h"                                      /* struct timeval */
#include <sys/time.h>                                   /* maximum # of file
descriptors */

/*
** Stuff for the NPP_SetWindow method:
*/
#ifndef XP_UNIX
#include <X11/Xlib.h>                                  /* Xlib */
#include <X11/Intrinsic.h>                             /* Xt */
#include <X11/StringDefs.h>                            /* "callback" */
#include "InitialI.h"
#include <Xm/Form.h>                                    /* Motif layout Widget */
#include <Xm/Label.h>                                   /* Motif Picture Widget */
#include <Xm/PushB.h>                                  /* Motif Button Widget */

#include "xpm.h" /* xpm library functions */
#include "ump.xpm" /* UMP in XPM format */

/* buttons in XPM format */
#include "stopup.xpm"
#include "stopdn.xpm"
#include "playup.xpm"
#include "playdn.xpm"
#include "pauseup.xpm"
#include "pausedn.xpm"

extern PerDisplayTablePtr _XtperDisplayList;

```

```

#endif /* XP_UNIX */

/* default library, compatible with TIMIDITY */
static const char *timmdir = "/usr/local/lib/timidity";

/* resort to slow sampling rate for busy/slow processors */
static int eightKFlag = 0;

/********************* Stop playing music, kill the subordinate task *****/
/*
 *
 *      Stop playing music, kill the subordinate task
 *
 *
 *
 *
 *
 */
/********************* Stop playing music, kill the subordinate task *****/

static void stopMidiPlayer(pid_t pid){
    if(pid != (pid_t) -1) {
        kill(pid, SIGHUP);
        while(waitpid(pid, 0, WNOHANG)>0); /* clean up after dead child */
    }
}

/********************* Function to actually play the music *****/
/*
 *
 *      Function to actually play the music
 *
 *
 *
 *
 */
/********************* Function to actually play the music *****/

static pid_t startMidiPlayer(const char *filename, int *pipes, int loop, int
start){

    void timiditySetPipe(int p);

    pid_t pid;

    /* set up IPC */
    (void)pipe(pipes);

    printf("HIT startMidiPlayer: %s %x %d %d \n", filename, *pipes, loop, start);
    fflush(stdout);
    /* if we're the parent, return the child ID */
    pid = fork(); if(pid != (pid_t)0) return pid;

    /* OK, now let's get ourselves somewhat removed from our parent */
    {
        int fd, sig;
        struct rlimit rlp;

        /* start by closing all file descriptors (except stderr, and our pipe) */

```

```

(void) getrlimit(RLIMIT_NOFILE, &rlp);
for(fd = 3; fd < rlp.rlim_max; fd++) if(fd != pipes[0]) (void) close(fd);

/* now attach stdin and sdtout to /dev/null */
(void) freopen("/dev/null", "r", stdin);
(void) freopen("/dev/null", "w", stdout);

/* then remove an netscape-installed signal handlers */
for(sig=0; sig < 64; sig++) signal(sig, SIG_DFL);
}

/* Now play the sound file */

{
    static const char *argv[4];
    argv[0] = "timidity";
    argv[1] = "-Od";
    argv[2] = eightKFlag ? "-s8000": "-s22050"; /* check if the user specified
8K rate */
    argv[3] = filename;

    /* change to the configuration directory */
    chdir(timdir);

    /* tell timidity where to read GUI input */
    timiditySetPipe(pipes[0]);

    /* loop forever, until unloaded, wait for play to be enabled */
    do {

        signed char c;

        /* wait for a new play command before starting */
        if(!start) while (read(pipes[0], &c, 1) == 1 && c != ' ');

        /* fprintf(stderr, "GOT START: %d\n", start); fflush(stderr); */
        start = ~0; /* we've started now! */

        /* fprintf(stderr, "CALL: %s %s %s %s\n", argv[0], argv[1], argv[2], argv[3]);
fflush(stderr); */
        /* jump to timidity */
        {
            int status;
            int timiditymain();
            /* fprintf(stderr, "timiditymain: %xx ME: %d \n", timiditymain, getpid());
fflush(stderr); */
            status = timiditymain(4, argv);
            /* fprintf(stderr, "back from main %d \n", status); fflush(stderr); */
        }

        if(!loop){
            /* wait for a new stop command before starting again */
            while (read(pipes[0], &c, 1) == 1 && c != ' ');

            /* wait for a new play command before starting again */
            while (read(pipes[0], &c, 1) == 1 && c != ' ');
        }
    }
}

```

```

        } while(~0); /* loop forever */

    }

/* bye now */
_exit(0);

}

/*****
 * Instance state information about the plugin.
 *
 * PLUGIN DEVELOPERS:
 *     Use this struct to hold per-instance information that you'll
 *     need in the various functions in this file.
 *****/
/* we'll read in all the file before processing. Typical MIDI files are
smallish,
so it should be OK */
static const char *filestub = "/tmp/midi";

typedef enum { PLUGIN_PLAYING, PLUGIN_STOPPED, PLUGIN_PAUSED } pluginPlayState;

typedef struct _PluginInstance
{
    int fd; /* file descriptor for temp file */
    const char *filename; /* name of same */
    pid_t pid; /* process ID of sound player (FIXME -- should be global???) */
    int pipes[2]; /* inter-process communication */
    pluginPlayState pluginState; /* stopped, paused, or playing */
    int loop; /* 0 means play only once, non-zero means loop forever */

    /* UNIX data members */
#ifndef XP_UNIX
    Widget play, pause, stop; /* button widgets, and their pictures, as well as
the logo picture */
    Pixmap logoPixmap, playupPixmap, playdnPixmap, pauseupPixmap, pausednPixmap,
stopupPixmap, stopdnPixmap ;
    Display *display; /* needed for XFreePixmap() */
    int width, height; /* how big is the UMP logo? */
#endif /* XP_UNIX */

    FILE *tst;
} PluginInstance;

/*****
 *
 * Empty implementations of plugin API functions
 *
 * PLUGIN DEVELOPERS:
 *     You will need to implement these functions as required by your
 *     plugin.
 *****/

```

```

char*
NPP_GetMIMEDescription(void)
{
    static char *desc =
        "audio/midi:mid,midi,foo:<A HREF=mailto:hoff@bnl.gov>Larry Hoff's</A> "
        "UMP plugin version 1.10;"
        "audio/x-midi:mid,midi,bar:<A HREF=mailto:hoff@bnl.gov>Larry Hoff's</A> "
        "UMP plugin version 1.10;";

    return(desc);
}

NPError
NPP_GetValue(void *future, NPPVariable variable, void *value)
{
    NPError err = NPERR_NO_ERROR;

    static char *desc =
        "This plugin plays MIDI, using the timidity "
        "toolkit, via the standard audio device.<P>"
        "By default, timidity configuration files are in the directory "
        "/usr/local/lib/timidity<P>"
        "Use the TIMID_DIR environment variable to change "
        "the configuration directory.<P>"
        "You may set the environment variable TIMID_8K to "
        "reduce the sampling rate (to 8000 Hz) for busy or slow "
        "processors, or for machines which only support 8KHz.<P>";

    switch (variable) {
    case NPPVpluginNameString:
        *((char **)value) = "UNIX MIDI plugin";
        break;
    case NPPVpluginDescriptionString:
        *((char **)value) = desc;
        break;
    default:
        err = NPERR_GENERIC_ERROR;
    }
    return err;
}

NPError
NPP_Initialize(void)
{
    /* see if the user has specified an alternate directory for timidity */
    if(getenv("TIMID_DIR") != NULL) timdir = getenv("TIMID_DIR");

    /* see if the user has specified an alternate directory for timidity */
    if(getenv("TIMID_8K") != NULL) eightKFlag = 1;

    return NPERR_NO_ERROR;
}

```

```

}

NPError
NPP_New(NPMIMEType pluginType,
        NPP instance,
        uint16 mode, /* either NP_EMBED or NP_FULLSCREEN, we don't care */
        int16 argc, /* number of name/value pairs */
        char* argv[],
        char* argc[],
        NPSavedData* saved)
{
    PluginInstance* This;

    if (instance == NULL)
        return NPERR_INVALID_INSTANCE_ERROR;

    instance->pdata = NPN_MemAlloc(sizeof(PluginInstance));
    This = (PluginInstance*) instance->pdata;

    if (This == NULL)
        return NPERR_OUT_OF_MEMORY_ERROR;

    fprintf(stderr, "11 INSTANCE: %x\n", instance); fflush(stderr);
    {
        /* construct a filename unique to this instance to
         * store the data in */
        static char buf[256];
        sprintf(buf, "%s%x.mid", filestub, This);
        This->filename = buf;
        This->pid = -1;
        This->pipes[1] = -1;
        This->pipes[0] = -1;
        This->logopixmap = -1;
        This->playupPixmap = -1;
        This->playdnPixmap = -1;
        This->pauseupPixmap = -1;
        This->pausendnPixmap = -1;
        This->stopupPixmap = -1;
        This->stopdnPixmap = -1;
        This->pluginState = PLUGIN_PLAYING;
        This->loop = 0;

        This->tst = fopen("/tmp/log", "w");
        fprintf(This->tst, "New\n");
        fflush(This->tst);
    }

/* fprintf(stderr, "22INSTANCE: %x\n", instance); fflush(stderr); */
{
    /* handle user-overrides */

    int i;
}

```

```

for(i = 0; i < argc; i++) {
    if(strcasecmp(argv[i], "loop") == 0){
        if(strcasecmp(argv[i], "true") == 0 ||
           strcasecmp(argv[i], "yes") == 0) {
            This->loop = ~0;
        }
    }
    else if(strcasecmp(argv[i], "autostart") == 0){
        if(strcasecmp(argv[i], "false") == 0 ||
           strcasecmp(argv[i], "no") == 0) {
            This->pluginState = PLUGIN_STOPPED;
        }
    }
}
/* fprintf(stderr, "33 INSTANCE: %x\n", instance); fflush(stderr); */

/* Load associated JAVA class */
(void) setupLiveConnect(instance, This);
/* fprintf(stderr, "44 INSTANCE: %x\n", instance); fflush(stderr); */

return NPERR_NO_ERROR;
}

NPError
NPP_Destroy(NPP instance, NPSavedData** save)
{
    PluginInstance* This;

    if (instance == NULL)
        return NPERR_INVALID_INSTANCE_ERROR;

    This = (PluginInstance*) instance->pdata;

    /* PLUGIN DEVELOPERS:
     * If desired, call NP_MemAlloc to create a
     * NPSavedDate structure containing any state information
     * that you want restored if this plugin instance is later
     * recreated.
     */

    /* quiet things up ASAP */
    if(This->pluginState == PLUGIN_PLAYING) {

        /* ' ' means toggle pause */
        write(This->pipes[1], " ", 1);
    }

    if (This != NULL) {
        /* get rid of the temporary file */
        (void) unlink(This->filename);

        /* clean up IPC */
    }
}

```

```

        close(This->pipes[1]);
        close(This->pipes[0]);

#ifndef XP_UNIX
    if(This->logoPixmap != -1)XFreePixmap(This->display, This->logoPixmap);
    if(This->playupPixmap != -1)XFreePixmap(This->display, This->playupPixmap);
    if(This->playdnPixmap != -1)XFreePixmap(This->display, This->playdnPixmap);
    if(This->pauseupPixmap != -1)XFreePixmap(This->display, This-
>pauseupPixmap);
    if(This->pausednPixmap != -1)XFreePixmap(This->display, This-
>pausednPixmap);
    if(This->stopupPixmap != -1)XFreePixmap(This->display, This->stopupPixmap);
    if(This->stopdnPixmap != -1)XFreePixmap(This->display, This->stopdnPixmap);
#endif

    /* stop player */
    stopMidiPlayer(This->pid);

    NPN_MemFree(instance->pdata);
    instance->pdata = NULL;
}

return NPERR_NO_ERROR;
}

/* give buttons the right look for the state of the plugin */

static void setButtons(PluginInstance* This, pluginPlayState state){

    switch(This->pluginState = state){

        case PLUGIN_PLAYING :
            if(This->playdnPixmap != -1)
                XtVaSetValues(This->play, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>playdnPixmap, NULL);
            if(This->pauseupPixmap != -1)
                XtVaSetValues(This->pause, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>pauseupPixmap, NULL);
            if(This->stopupPixmap != -1)
                XtVaSetValues(This->stop, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>stopupPixmap, NULL);
            break;

        case PLUGIN_PAUSED :
            if(This->playupPixmap != -1)
                XtVaSetValues(This->play, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>playdnPixmap, NULL);
            if(This->pausednPixmap != -1)
                XtVaSetValues(This->pause, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>pausednPixmap, NULL);
            if(This->stopupPixmap != -1)
                XtVaSetValues(This->stop, XmNlabelType, XmPIXMAP, XmNlabelPixmap, This-
>stopupPixmap, NULL);
            break;

        case PLUGIN_STOPPED :
            if(This->playupPixmap != -1)

```

```

        XtVaSetValues(This->play, XmNlabelType, XmPIXTMAP, XmNlabelPixmap, This-
>playupPixmap, NULL);
        if(This->pauseupPixmap != -1)
            XtVaSetValues(This->pause, XmNlabelType, XmPIXTMAP, XmNlabelPixmap, This-
>pauseupPixmap, NULL);
        if(This->stopdnPixmap != -1)
            XtVaSetValues(This->stop, XmNlabelType, XmPIXTMAP, XmNlabelPixmap, This-
>stopdnPixmap, NULL);
        break;
    }

}

/* handle state changes caused by button pushes */

static void pauseSelected(Widget w, XtPointer client_data, XtPointer call_data){

    PluginInstance *This = (PluginInstance *) client_data;

    if(This->pluginState != PLUGIN_STOPPED){

        /* ' ' means toggle pause */
        write(This->pipes[1], " ", 1);

        setButtons(This, This->pluginState == PLUGIN_PAUSED? PLUGIN_PLAYING:
PLUGIN_PAUSED);
    }
}

static void playSelected(Widget w, XtPointer client_data, XtPointer call_data){

    PluginInstance *This = (PluginInstance *) client_data;

    if(This->pluginState != PLUGIN_PLAYING){

        /* ' ' means toggle pause */
        write(This->pipes[1], " ", 1);

        setButtons(This, PLUGIN_PLAYING);
    }
}

static void stopSelected(Widget w, XtPointer client_data, XtPointer call_data){

    PluginInstance *This = (PluginInstance *) client_data;

    if(This->pluginState == PLUGIN_PAUSED){

        /* ' q ' means toggle pause, quit, then toggle pause */
        write(This->pipes[1], " q ", 3);

        setButtons(This, PLUGIN_STOPPED);
    }
}

```

```

}

else if(This->pluginState == PLUGIN_PLAYING){

    /* 'q' means quit, then toggle pause */
    write(This->pipes[1], "q ", 2);

    setButtons(This, PLUGIN_STOPPED);
}

static void writePlayStatus(Widget w, XtPointer closure, XEvent* event, Boolean* b){

    NPN_Status((NPP)closure, "Play MIDI music");
    *b = False;

}

static void writePauseStatus(Widget w, XtPointer closure, XEvent* event,
Boolean* b){

    NPN_Status((NPP)closure, "Pause/Resume MIDI music");
    *b = False;

}

static void writeStopStatus(Widget w, XtPointer closure, XEvent* event, Boolean* b){

    NPN_Status((NPP)closure, "Stop MIDI music");
    *b = False;

}

static void clearStatus(Widget w, XtPointer closure, XEvent* event, Boolean* b){

    NPN_Status((NPP)closure, "");
    *b = False;

}

NPError
NPP_SetWindow(NPP instance, NPWindow* window)
{
    PluginInstance* This;

    if (instance == NULL)
        return NPERR_INVALID_INSTANCE_ERROR;

    if (window == NULL)
        return NPERR_NO_ERROR;

    This = (PluginInstance*) instance->pdata;
}

```

```

fprintf(This->tst, "SetWindow\n");fflush(This->tst);

/*
 * PLUGIN DEVELOPERS:
 * Before setting window to point to the
 * new window, you may wish to compare the new window
 * info to the previous window (if any) to note window
 * size changes, etc.
 */

#ifndef XP_UNIX
fprintf(This->tst, "setCallBack\n");fflush(This->tst);
{

Widget netscape_widget, form, logo;
XpmAttributes attr;

NPSetWindowCallbackStruct *winInfo = (NPSetWindowCallbackStruct *)window-
>ws_info;
fprintf(This->tst, "post setCallBack: winInfo: %xx\n", winInfo);fflush(This-
>tst);
fprintf(This->tst, "post setCallBack: display: %xx\n", winInfo-
>display);fflush(This->tst);
fprintf(This->tst, "window: %xx x: %xx y: %xx width: %xx height: %xx clipRect
%xx ws_info: %xx\n",
window->window,window->x,window->y,window->width,window->height,window-
>clipRect,window->ws_info); fflush(This->tst);

This->display = winInfo->display;
fprintf(This->tst, "done display\n");fflush(This->tst);

/* tell XPM to allocate fairly close (not exact) colors from the window's
colormap */
attr.valueMask =
XpmSize|XpmCloseness|XpmAllocCloseColors|XpmExactColors|XpmColormap|XpmDepth|Xpm
Visual;
attr.closeness = 30000;
attr.alloc_close_colors = True;
attr.exactColors = False;
attr.colormap = winInfo->colormap;
attr.depth = winInfo->depth;
attr.visual = winInfo->visual;
fprintf(This->tst, "colormap: %xx depth: %xx visual: %xx type: %xx\n",
attr.colormap, attr.depth, attr.visual, winInfo->type); fflush(This->tst);

/* while it's at it, tell us what size the logo is */
/* reuse the pixmap (if possible), assume the colormap and depth will always
be the same */
/* otherwise we'd have to call XFreePixmap in the XtNdestroyCallback for
each widget */
if(This->playupPixmap == -1) {
    if(XpmCreatePixmapFromData(This->display, (Window) window->window, ump,
&This->logoPixmap, NULL, &attr) == XpmSuccess) {

```

```

    This->width = attr.width;
    This->height = attr.height;
}
}

fprintf(This->tst, "createPixmap 1\n");fflush(This->tst);
if(This->playupPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
playup, &This->playupPixmap, NULL, &attr);

fprintf(This->tst, "createPixmap 2\n");fflush(This->tst);
if(This->playdnPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
playdn, &This->playdnPixmap, NULL, &attr);

fprintf(This->tst, "createPixmap 3\n");fflush(This->tst);
if(This->pauseupPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
pauseup, &This->pauseupPixmap, NULL, &attr);

if(This->pausendnPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
pausendn, &This->pausendnPixmap, NULL, &attr);

if(This->stopupPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
stopup, &This->stopupPixmap, NULL, &attr);

if(This->stopdnPixmap == -1)
    (void)XpmCreatePixmapFromData(This->display, (Window) window->window,
stopdn, &This->stopdnPixmap, NULL, &attr);

/* determine our parentage */

{
Display *disp;
disp = This->display;

fprintf(This->tst, "Disp Ht: %d Disp Wd: %d \n", DisplayHeight(disp, 0),
DisplayWidth(disp, 0));
}
fprintf(This->tst, "parentage %xx %xx dipslaylist: %xx\n", This->display,
(Window) window->window, _XtperDisplayList); fflush(This->tst);

netscape_widget = XtWindowToWidget(This->display, (Window) window->window);

/* fit our widgets into a form */
/* no spacing between widgets, we use pixmaps in each widget to define
borders */
fprintf(This->tst, "UMP form %xx %xx\n", xmFormWidgetClass, netscape_widget);
fflush(This->tst);
form = XtVaCreateWidget("UMP form", xmFormWidgetClass, netscape_widget,
NULL);

```

```

/* Some buttons */
fprintf(This->tst, "Managed Widget\n");fflush(This->tst);
This->stop = XtVaCreateManagedWidget("stop", xmPushButtonWidgetClass, form,
                                     XmNshadowThickness, 0,
                                     XmNhightlightThickness, 0,
                                     XmNmarginHeight, 0,
                                     XmNmarginWidth, 0,
                                     XmNtopAttachment, XmATTACH_FORM,
                                     XmNleftAttachment, XmATTACH_FORM,
                                     XmNtopOffset, 0,
                                     XmNleftOffset, 28,
                                     NULL);

This->pause = XtVaCreateManagedWidget("pause", xmPushButtonWidgetClass,
form,
                                     XmNshadowThickness, 0,
                                     XmNhightlightThickness, 0,
                                     XmNmarginHeight, 0,
                                     XmNmarginWidth, 0,
                                     XmNtopAttachment, XmATTACH_FORM,
                                     XmNleftAttachment, XmATTACH_WIDGET,
                                     XmNleftWidget, This->stop,
                                     XmNtopOffset, 0,
                                     XmNleftOffset, 6,
                                     NULL);

This->play = XtVaCreateManagedWidget("play", xmPushButtonWidgetClass, form,
                                     XmNshadowThickness, 0,
                                     XmNhightlightThickness, 0,
                                     XmNmarginHeight, 0,
                                     XmNmarginWidth, 0,
                                     XmNtopAttachment, XmATTACH_FORM,
                                     XmNleftAttachment, XmATTACH_WIDGET,
                                     XmNleftWidget, This->pause,
                                     XmNtopOffset, 0,
                                     XmNleftOffset, 7,
                                     NULL);

/* tell us when the buttons are pushed */
XtAddCallback(This->play, XmNactivateCallback, playSelected, (XtPointer)
This);
XtAddCallback(This->pause, XmNactivateCallback, pauseSelected, (XtPointer)
This);
XtAddCallback(This->stop, XmNactivateCallback, stopSelected, (XtPointer)
This);

/* write help text when the mouse is over the button */
XtAddEventHandler(This->play, EnterWindowMask, False, writePlayStatus,
(XtPointer) instance);
XtAddEventHandler(This->play, LeaveWindowMask, False, clearStatus,
(XtPointer) instance);

XtAddEventHandler(This->pause, EnterWindowMask, False, writePauseStatus,
(XtPointer) instance);
XtAddEventHandler(This->pause, LeaveWindowMask, False, clearStatus,
(XtPointer) instance);

```

```

    XtAddEventHandler(This->stop, EnterWindowMask, False, writeStopStatus,
(XtPointer) instance);
    XtAddEventHandler(This->stop, LeaveWindowMask, False, clearStatus,
(XtPointer) instance);

/* Here's our logo, no border around our nice pixmap */
logo = XtVaCreateManagedWidget("UMP logo", xmLabelWidgetClass, form,
                           XmNshadowThickness, 0,
                           XmNhighlightThickness, 0,
                           XmNmarginHeight, 0,
                           XmNmarginWidth, 0,
                           XmNtopAttachment, XmATTACH_FORM,
                           XmNleftAttachment, XmATTACH_FORM,
                           XmNtopOffset, 0,
                           XmNleftOffset, 0,
                           NULL);

/* show the logo */
if(This->logoPixmap != -1)
    XtVaSetValues(logo, XmNlabelType, XmPIXTMAP, XmNlabelPixmap, This-
>logoPixmap, NULL);

/* give buttons the right look and feel */
setButtons(This, This->pluginState);

/* hand over control. Our job is done! */
XtManageChild(form);

/* jam it to the correct size, otherwise Netscape lets us go wild! */
XtMakeResizeRequest(form,
                    This->width<window->width?This->width:window->width,
                    This->height<window->height?This->height:window->height,
                    NULL, NULL);

}

#endif /* XP_UNIX */

return NPERR_NO_ERROR;
}

NPError
NPP_NewStream(NPP instance,
              NPMIMETYPE type,
              NPStream *stream,
              NPBool seekable,
              uint16 *stype)
{
    NPByteRange range;
    PluginInstance* This;

    if (instance == NULL)
        return NPERR_INVALID_INSTANCE_ERROR;

    This = (PluginInstance*) instance->pdata;
}

```

```

/* open the file to store data in */
This->fd = open(This->filename, O_RDWR|O_CREAT, 0666);
if(This->fd == -1) return NPERR_GENERIC_ERROR;

return NPERR_NO_ERROR;
}

/* PLUGIN DEVELOPERS:
 * These next 2 functions are directly relevant in a plug-in which
 * handles the data in a streaming manner. If you want zero bytes
 * because no buffer space is YET available, return 0. As long as
 * the stream has not been written to the plugin, Navigator will
 * continue trying to send bytes. If the plugin doesn't want them,
 * just return some large number from NPP_WriteReady(), and
 * ignore them in NPP_Write(). For a NP_ASFILE stream, they are
 * still called but can safely be ignored using this strategy.
*/
int32 STREAMBUFSIZE = 0X0FFFFFFF; /* If we are reading from a file in NPAsFile
                                     * mode so we can take any size stream in our
                                     * write call (since we ignore it) */

int32
NPP_WriteReady(NPP instance, NPStream *stream)
{
    PluginInstance* This;
    if (instance != NULL)
        This = (PluginInstance*) instance->pdata;

    return STREAMBUFSIZE;
}

int32
NPP_Write(NPP instance, NPStream *stream, int32 offset, int32 len, void *buffer)
{
    if (instance != NULL)
    {
        PluginInstance* This = (PluginInstance*) instance->pdata;
        len = write(This->fd, buffer, len);
        if(len <0) close(This->fd);
    }

    return len;           /* The number of bytes accepted */
}

NPError
NPP_DestroyStream(NPP instance, NPStream *stream, NPError reason)
{
    PluginInstance* This;

    if (instance == NULL)
        return NPERR_INVALID_INSTANCE_ERROR;
    This = (PluginInstance*) instance->pdata;
}

```

```

close(This->fd);

/* stop another player in progress ???*/
stopMidiPlayer(This->pid);

/* yahoo, now we have the data, run timidity */
This->pid = startMidiPlayer(This->filename, This->pipes, This->loop, This-
>pluginState == PLUGIN_PLAYING);

NPN_Status(instance, "Playing MIDI file");

return NPERR_NO_ERROR;
}

void
NPP_StreamAsFile(NPP instance, NPStream *stream, const char* fname)
{
    PluginInstance* This;
    if (instance != NULL)
        This = (PluginInstance*) instance->pdata;

    /* just spwan timidity */
    This->pid = startMidiPlayer(fname, This->pipes, This->loop, This->pluginState
== PLUGIN_PLAYING);

    NPN_Status(instance, "Playing MIDI file");
}

void
NPP_Print(NPP instance, NPPrint* printInfo)
{
    if (printInfo == NULL)
        return;

    if (instance != NULL) {
        PluginInstance* This = (PluginInstance*) instance->pdata;

        if (printInfo->mode == NP_FULL) {
/*
 * PLUGIN DEVELOPERS:
 *     If your plugin would like to take over
 *     printing completely when it is in full-screen mode,
 *     set printInfo->pluginPrinted to TRUE and print your
 *     plugin as you see fit.  If your plugin wants Netscape
 *     to handle printing in this case, set
 *     printInfo->pluginPrinted to FALSE (the default) and
 *     do nothing.  If you do want to handle printing
 *     yourself, printOne is true if the print button
 *     (as opposed to the print menu) was clicked.
 *     On the Macintosh, platformPrint is a THPrint; on
 *     Windows, platformPrint is a structure
 *     (defined in npapi.h) containing the printer name, port,
 *     etc.

```

```

        */

void* platformPrint =
printInfo->print.fullPrint.platformPrint;
NPBool printOne =
printInfo->print.fullPrint.printOne;

/* Do the default*/
printInfo->print.fullPrint.pluginPrinted = FALSE;
}
else { /* If not fullscreen, we must be embedded */
/*
 * PLUGIN DEVELOPERS:
 *      If your plugin is embedded, or is full-screen
 *      but you returned false in pluginPrinted above, NPP_Print
 *      will be called with mode == NP_EMBED. The NPWindow
 *      in the printInfo gives the location and dimensions of
 *      the embedded plugin on the printed page. On the
 *      Macintosh, platformPrint is the printer port; on
 *      Windows, platformPrint is the handle to the printing
 *      device context.
*/
NPWindow* printWindow =
&(printInfo->print.embedPrint.window);
void* platformPrint =
printInfo->print.embedPrint.platformPrint;
}
}

#ifndef INCLUDE_LIVE_CONNECT

setupLiveConnect(NPP instance, PluginInstance *This){}

jref
NPP_GetJavaClass()
{
    return NULL;
}

void
NPP_Shutdown(void)
{
}

#else

/* IMHO, Live Connect adds lots of overhead and complexity compared to
the extra functionality it provides (for UMP, anyway). Here we
allow Java applets or JavaScript to operate the stop/pause/play
buttons. For this, we must load the "UMP" java class file, which
must be in the user's CLASSPATH. Then we cannot even operate
directly on the Widgets, because X gets confused when run from an
applet thread, so we use a short (msec) timeout which actually
does the work.
*/

```

```

#include "UMP.c" /* created by : javac UMP.java; javah -jri -stubs UMP */

setupLiveConnect(NPP instance, PluginInstance *This){

    /* store the pointer-to-object for later use (one Java peer per plugin
instance) */
    UMP_setThis(NPN_GetJavaEnv(), NPN_GetJavaPeer(instance), (int) This);

}

jref
NPP_GetJavaClass()
{
    /* enable Live Connect */
    return use_UMP(NPN_GetJavaEnv());
}

void
NPP_Shutdown(void)
{
    /* all done with Live Connect */
    unuse_UMP(NPN_GetJavaEnv());
}

/* functions for LiveConnect */

static void stopSelectedCallback(XtPointer This, XtIntervalId* id){
stopSelected(NULL, This, NULL); }

void native_UMP_stopSelected(JRIEnv* env, UMP *self, jint This){

    PluginInstance *Ump = (PluginInstance *)This;

    (void) XtAppAddTimeOut(XtWidgetToApplicationContext(Ump->stop), 1,
stopSelectedCallback, (XtPointer) This);

}

static void playSelectedCallback(XtPointer This, XtIntervalId* id){
playSelected(NULL, This, NULL); }

/* functions for LiveConnect */
void native_UMP_playSelected(JRIEnv* env, UMP *self, jint This){

    PluginInstance *Ump = (PluginInstance *)This;

    (void) XtAppAddTimeOut(XtWidgetToApplicationContext(Ump->stop), 1,
playSelectedCallback, (XtPointer) This);

}

static void pauseSelectedCallback(XtPointer This, XtIntervalId* id){
pauseSelected(NULL, This, NULL); }

```

```
/* functions for LiveConnect */
void native_UMP_pauseSelected(JRIEnv* env, UMP *self, jint This){

    PluginInstance *Ump = (PluginInstance *)This;

    (void) XtAppAddTimeOut(XtWidgetToApplicationContext(Ump->stop), 1,
pauseSelectedCallback, (XtPointer) This);

}

#endif
```

```

/*
 * plugext1.0 is a compiled version of plugext for Tcl.
 * -- Clif Flynt <clif@cflynt.com> Jan 3, 1999
 * --
 * -- Modified from get.c by
 * -- Jean-Claude Wippler <jcw@equi4.com>, September 17, 1998.
 */

#include <stdio.h>
#if defined (_WIN32)
#include <windows.h>
#else
#include <dlfcn.h>
#endif
#include <tcl.h>

Tcl_HashTable *dlopen_hashtablePtr;
extern int dummyDebugPrint;

void dlopen_InitHashTable () {
    dlopen_hashtablePtr = (Tcl_HashTable *) ckalloc(sizeof(Tcl_HashTable));
    Tcl_InitHashTable(dlopen_hashtablePtr, TCL_STRING_KEYS);
}

static int
dlopen(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv)
{
    char hash_handle[50];
    char *tmp;
    void *handle;
    Tcl_HashEntry *hashEntryPtr;
    Tcl_Obj *returnObjPtr;
    int isNew;

    if (objc > 1)
    {

        tmp = TclGetStringFromObj(objv[1], NULL);
        #if defined (_WIN32)
            handle = LoadLibrary(tmp);
        #else
            handle = dlopen(tmp, RTLD_NOW | RTLD_GLOBAL);
        #endif

        if (!handle) {
            fprintf(stderr, "FAIL IN DOPEN: %s\n", tmp);
        #if defined (_WIN32)
            fprintf (stderr, "%s\n", "Is there a windows errro fcn");
        #else
            fprintf (stderr, "%s\n", dlerror());
        #endif
            return(TCL_ERROR);
        }
    }
}

```

```

/*
 * Allocate the space and initialize the return structure.
 */
sprintf(hash_handle, "X%x", handle);

hashEntryPtr = Tcl_CreateHashEntry(dlopen_hashtablePtr, hash_handle,
&isNew);
Tcl_SetHashValue(hashEntryPtr, handle);

returnObjPtr = Tcl_NewStringObj(hash_handle, -1);

Tcl_SetObjResult(interp, returnObjPtr);

return TCL_OK;
}

__getfpucw() {printf("hit getfpucw\n"); fflush(stdout);}

#if defined (_WIN32)

static int
dlSym(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv) {

    Tcl_Obj *returnObjPtr;

    returnObjPtr = Tcl_NewStringObj("dlSym not implemented for Windows", -1);

    Tcl_SetObjResult(interp, returnObjPtr);
    return TCL_OK;
}

#else

static int
dlSym(ClientData x, Tcl_Interp* interp, int objc, Tcl_Obj*CONST* objv)
{
    char *hash_handle;
    char *tmp;
    void *handle;
    Tcl_HashEntry *hashEntryPtr;
    Tcl_Obj *returnObjPtr;
    void *locat;
    char rtnString[20];

    if (objc > 1)
    {
        hash_handle = TclGetStringFromObj(objv[1], NULL);
        hashEntryPtr = Tcl_FindHashEntry(dlopen_hashtablePtr, hash_handle);
        if (hashEntryPtr == (Tcl_HashEntry *) NULL) {
            char errString[80];
            Tcl_Obj *errCodePtr;

/*

```

```

    * Define an error code from an integer, and set errorCode.
    */
errCodePtr = Tcl_NewIntObj(554);
Tcl_SetObjErrorCode(interp, errCodePtr);

/*
 * This string will be placed in the global variable errorInfo
 */

sprintf(errString, "Hash object \"%s\" does not exist.", hash_handle);
Tcl_AddErrorInfo(interp, errString);

/*
 * This string will be returned as the result of the command.
 */
Tcl_AppendResult(interp, "can not find hashed object named \"",
                 hash_handle, "\"", (char *) NULL);
return TCL_ERROR;
}

handle = (char *)Tcl_GetHashValue(hashEntryPtr);

tmp = TclGetStringFromObj(objv[2], NULL);

locat = dlsym(handle, tmp);

sprintf(rtnString, "%x", locat);

}

/*
 * Allocate the space and initialize the return structure.
 */
returnObjPtr = Tcl_NewStringObj(rtnString, -1);

Tcl_SetObjResult(interp, returnObjPtr);

return TCL_OK;
}
#endif

#if defined (_WIN32)

#define WINEXPORT(t) __declspec(dllexport) t
#ifndef _WIN
#define WINEXPORT(t) t __export
#else
#define WINEXPORT(t) t
#endif

#if defined (__MWERKS__)
#pragma export on
#endif

```

```
WINEXPORT(int) Dlopen_Init(Tcl_Interp* interp)
{
    Tcl_CreateObjCommand(interp, "dlopen", dlOpen, 0, 0);
    Tcl_CreateObjCommand(interp, "dlsym", dlSym, 0, 0);

    dlopen_InitHashTable ();

    Tcl_PkgProvide(interp, "dlopen", "1.0");

    return TCL_OK;
}

WINEXPORT(int) Dlopen_SafeInit(Tcl_Interp* interp)
{
    return Dlopen_Init(interp);
}
```

```

package require plugext

#
#
# Embed - state variable
# Embed(uniq) - A unique number for the instances
# Embed(UPPER.$id) - A keyword/value pair for an instance.
# Embed(lower.$id) - A value assigned by the embed command.
#
# Embed(MIMETYPE)      - The command for this creation of the plugin
# Embed(instance.$id)   - The command for this instance of the plugin
# Embed(canvas.$id)     - The canvas for this instance of the plugin
#
# Adds one new arg to embed xx=yy -
# KEEPOPEN=1    default - the embed call does not close the stream after
#                      sending data to the plugin.
# KEEPOPEN=0    default - the embed call closes the stream after
#                      sending data to the plugin. Closing the stream causes some
#                      plugins to start.

namespace eval EMBED {
variable Embed
variable output [open argh w]

set Embed(uniq) 1
set Embed(CanvasParent) ""

switch $tcl_platform(platform) {
    "unix" {
        package require dlopen
        set Embed(xref) {
            {.mid audio/x-midi /usr/lib/netscape/plugins/ump.so}
            {.midi audio/x-midi /usr/lib/netscape/plugins/ump.so}
        }
    }
    "windows" {
        set Embed(xref) {
            {.rpm audio/x-pn-realaudio-plugin ./nppl3260.dll}
            {.rm audio/x-pn-realaudio-plugin ./nppl3260.dll}
            {.spl application/futuresplash ./npswf32.dll}
            {.swf application/shockwave-flash ./npswf32.dll}
            {.pdf application/pdf ./nppdf32.dll}
            {.afl video/animaflex ./nprub.dll}
            {.ivf video/x-ivf ./npindeo.dll}
            {.wav audio/x-wav ./npwave.dll}
            {.mid audio/x-midi ./midid.dll}
            {.midi audio/x-midi ./midid.dll}
            {.npw application/x-npwrap ./NPWrap.dll}
            {.mid audio/x-midi ./npmidi.dll}
            {.midi audio/x-midi ./npmidi.dll}
        }
    }
}

proc getCanvas {id} {
    variable Embed
    if {[info exists Embed(canvas.$id)]} {

```

```

        return $Embed(canvas.$id)
    } else {
        return ""
    }
}

proc getInstance {id} {
    variable Embed
    if {[info exists Embed(canvas.$id)]} {
        return $Embed(instance.$id)
    } else {
        return ""
    }
}

proc setCanvasParent {windowID} {
    set Embed(CanvasParent) $windowID
}

proc embed {args} {
    global tcl_platform
    variable Embed
    variable output

    set id $Embed(uniq)
    incr Embed(uniq)

    set mode "EMBED"
    set Embed(HIDDEN.$id) true
    set Embed(KEEPOPEN.$id) 1

    #
    # Parse the args.
    # Find the key=val and key="val" pairs and convert them to
    # set Embed(KEY) val
    # commands.
    #

    foreach arg $args {
        if {[string first "=" $arg] < 0} {continue}
        foreach {key val} [split $arg "="] {
            set val [string trim $val "{}"]
            set key [string toupper $key]
        }
        eval [list set Embed($key.$id) $val]
    }

    #
    # If the plugext extension is not loaded, load it.
    # If *n[ui]x platform, dlopen the required X libraries.
    #

    if {[string match "" [info command plugext]]} {
        if {[string match $tcl_platform(platform) unix]} {
            puts $output "loading dlopen, etc" ; flush $output
            # load "./dlopen"
        }
    }
}

```

```

        dlopen "/usr/X11R6/lib/libXt.so"
        dlopen "/usr/local/lib/libXm.so"
    }
# load plugext
plugext debug 1
}

#
# Figure out which plugin we need. Start by checking
# the SRC=...ext to see if we've got that extension in our list.
#

if {[info exists Embed(SRC.$id)]} {
    set ext [file extension $Embed(SRC.$id)]
    set pos [lsearch $Embed(xref) *$ext*]
    if {$pos >= 0} {
        set pluginPath [lindex [lindex $Embed(xref) $pos] 2]
        if {! [info exists Embed(TYPE.$id)]} {
            set Embed(TYPE.$id) [lindex [lindex $Embed(xref) $pos] 1]
        }
    }
}

# If no SRC matched, see if we can get the required info
# via the Mime TYPE=xx value

if {! [info exists pluginPath] && [info exists Embed(TYPE.$id)]} {
    set pos [lsearch $Embed(xref) *$Embed(TYPE.$id)*]
    if {$pos < 0} {break}
    set pluginPath [lindex [lindex $Embed(xref) $pos] 2]
}

# If we still can't figure out what to use, give up.

if {! [info exists pluginPath]} {
    error "No plugin defined for $args"
}

# Load the required plugin.
# Save it's handle in a state variable keyed by the Mime Type

set pluginID $Embed(TYPE.$id)

if {! [info exists Embed($pluginID)]} {
    set Embed($pluginID) [plugext create TST2 -path $pluginPath]
}

foreach a $args {
    if {[string first "=" $a] > 0} {
        if {[info exists embedargs]} {
            append embedargs " " $a
        } else {
            set embedargs $a
        }
    }
}

```

```

set Embed(instance.$id) [$Embed($pluginID) new \
    -mime $Embed(TYPE.$id) -embed $embedargs \
    -mode $mode]

#
# Generate a window, if HEIGHT and WIDTH are set, and HIDDEN=false/0
# If HIDDEN == True but HEIGHT/WIDTH are missing, set default size
#     200x200

# Can't use ! with a string, so I kludge to get !hidden

if {"$Embed(HIDDEN.$id)"} {} else {
    set ht 200;
    set wd 200;

    if {[info exists Embed(HEIGHT.$id)]} {
        set ht $Embed(HEIGHT.$id)
    }

    if {[info exists Embed(WIDTH.$id)]} {
        set wd $Embed(WIDTH.$id)
    }

    set Embed(canvas.$id) [canvas $Embed(CanvasParent).cPLUGIN$id \
        -height $ht -width $wd -background yellow]

    puts $output "CANVAS: $Embed(canvas.$id) :: $ht x $wd"; flush $output

    # Grid and update, to make sure the base OS has really allocated
    # space for this window before sending it to the plugin. Else,
    # life gets exciting.

    grid $Embed(canvas.$id) -row 0 -column 0
    update; update idle;

    $Embed(instance.$id) setwindow $Embed(canvas.$id)
    grid forget $Embed(canvas.$id)
}

#
# Figure out the type of stream we'll need to interact with
# Then close the stream again.
#

set Embed(out.$id) [$Embed(instance.$id) open -url file:$Embed(SRC.$id) -mime
$Embed(TYPE.$id) w]
fconfigure $Embed(out.$id) -translation binary
set streamType [$Embed(instance.$id) streamtype]

puts $output "STR: $streamType" ; flush $output

#
# Dump data as required by the stream type.
#

switch $streamType {
    "asfile"      {

```

```

        $Embed(instance.$id) streamfile $Embed(SRC.$id)
    }
    "asfileonly"      {
        $Embed(instance.$id) streamfile $Embed(SRC.$id)
    }
    "normal"       {
        set in [open $Embed(SRC.$id) r]
        fconfigure $in -translation binary

        set maxTransfer [$Embed(instance.$id) writeready $Embed(out.$id)]
        if {$maxTransfer > 64000} {
            set maxTransfer 64000
        }

        puts $output "maxTransfer: $maxTransfer"
        fconfigure $Embed(out.$id) -buffersize $maxTransfer

        # If the file is small go for speed.
        # If it's greater than 64K, reduce the memory footprint,
        # since it won't be fast no matter what we do.

        if {[file size $Embed(SRC.$id)] > 64000} {
            while {!eof $in} {
                set dat [read $in 4096]
                puts -nonewline $Embed(out.$id) $dat
            }
            flush $Embed(out.$id)
        } else {
            set dat [read $in]
            close $in
            puts -nonewline $Embed(out.$id) $dat
            flush $Embed(out.$id)
        }
        puts "DONE XFER"
    }
    default      {
        error "Unrecognized stream value: $streamType"
    }
}
if {!$Embed(KEEPOPEN.$id)} {
    puts "CLOSING $Embed(out.$id)"
    closeFile $id
}
return $id
}

proc resetWindow {id} {
    variable Embed
    if {"$Embed(HIDDEN.$id)"} {} else {
        $Embed(instance.$id) setwindow $Embed(canvas.$id)
    }
}
proc closeFile {id} {
    variable Embed
    if {[info exists Embed(out.$id)]} {
        close $Embed(out.$id)
        unset Embed(out.$id)
    }
}

```